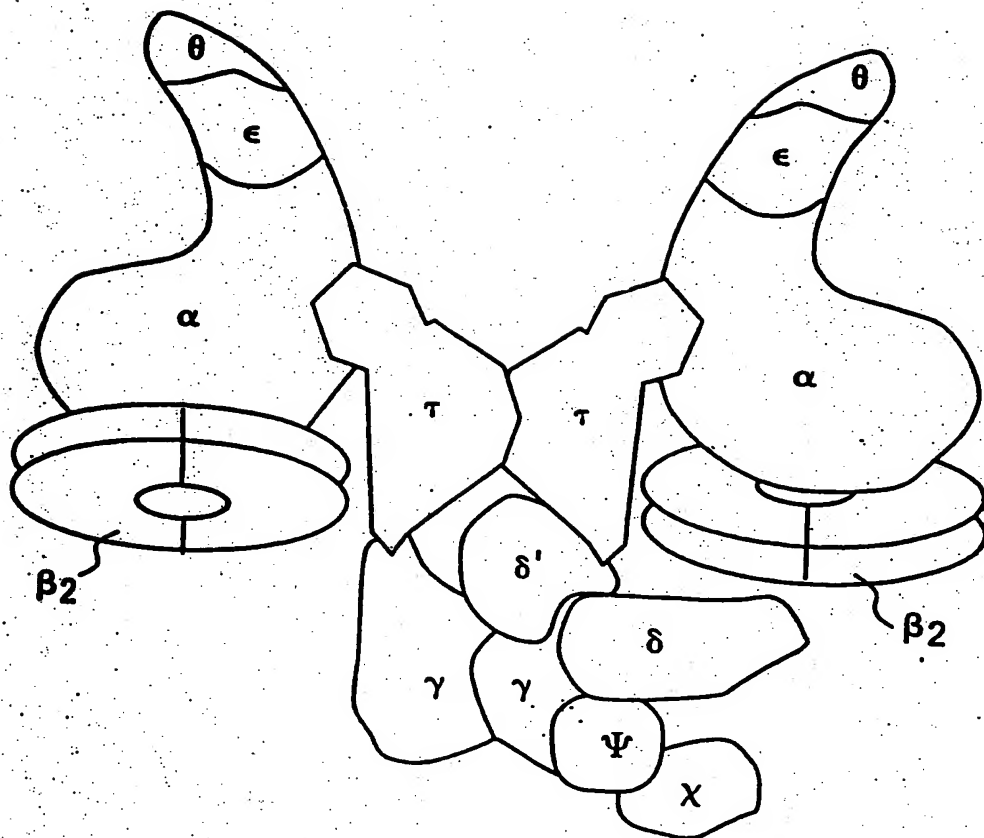


FIG.1



ATP binding

E. coli
 MSYQVLARKWRPQTFADVVGQEHVLTALANGLSLGRIHHAYLFSGTRGVGKTSIARLLAK
 B. subtilis
 MSYQALYRVFRPQRFEDVVGQEHITKTLQNALLOKKFSHAYLFSGPRGTGKTSAAKIFAK
 *** * * * * * * * * * * * * * * * * * * * * * * *

E. coli
 GLNCETGITATPCGVCDNCREIEQGRFVDLIEIDAASRTKVEDTRDLLDNVQYAPARGRF
 B. subtilis
 AVNCEHAPVDEPCNECAACKGITNGSISDVIEIDAASNNGVDEIRDIDKVKFAPSAVTY
 *** * * * * * * * * * * * * * * * * * * * * * * *

E. coli
 KVYLIDEVHMLSRHSFNALLKTLEPPPEHVKFLATTDPQKLPVTILSRCLQFHLKALDV
 B. subtilis
 KVIIDEVHMLSIGAFNALLKTLEPPPEHCIFILATTEPHKIPLTIISRCQRFDFKRITS
 *** * * * * * * * * * * * * * * * * * * * * * * *

FIG. 2

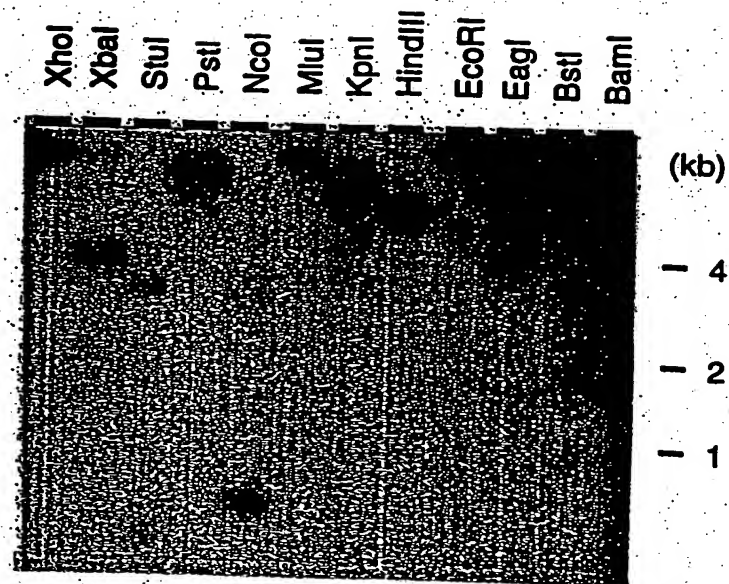


FIG.3

TCCGGGGGTG	GGGTTCCAG	GTAGACCCG	GCCCTCQCG	TGAGCCCCTT	TACCCAGGCC	60
GCCACCTCCT	CCAGGGGGC	CAAGCGTGC	AAGGAGGGA	ACGTCCGCAC	CACGCCCTAT	120
ACTAGCCTT	GTG AGC GCC CTC TAC CGC CGC TTC CGC CCC CTC ACC TTC CAG GAG GTG GTG					180
	met ser ala leu tyr arg phe arg pro leu thr phe gln glu val val					(17)
					S.D.	
GGG CAG GAG CAC GTG AAG GAG CCC CTC CTC AAG GCC ATC CGG GAG GGG AGG CTC GCC CAG						240
gly gln glu his val lys glu pro leu leu lys ala ile arg glu arg leu ala gln						(37)
GCS TAC CTS TTC TCC GGS AC						
GCC TAC CTC TTC TCC GGG CCC AGG GGC GTG GGC AAG ACC ACC ACG GCG AGG CTC CTC GCC						300
ala tyr leu phe ser gly pro arg gly val gly lys thr thr ala arg leu leu ala						(57)
ATG GCG GTG GGG TGC CAG GGG GAA GAC CCC CCT TGC GGG GTC TGC CCC CAC TGC CAG GCG						360
met ala val gly cys gln gly glu asp pro pro cys gly val cys pro his cys gln ala						(77)
GtG CAG AGG GGC GCC CAC CCG GAC GTG GTG GAC ATT GAC GCC GCG AAC AAC TCC GTG						420
val gln arg gly ala his pro asp val val asp ile asp ala ala ser asn ser val						(97)
GAG GAC GTG CGG GAG CTG AGG GAA AGG ATC CAC CTC GCC CTC TCT GCC CCC AGG AAG						480
glu asp val arg glu leu arg glu arg ile his leu ala pro leu ser ala pro arg lys						(117)
GTC TTC ATC CTG GAC GAG GCC CAC ATG CTC TCC AAA AGC GCC TTC AAC GCC CTC CTC AAG						540
val phe ile leu asp Glu ala his met leu ser lys ser ala phe asn ala leu leu lys						(137)

FIG.4A-1

GAG CGC CTC GCC CGC CGC TCC GAC GCC TTA AGC CTG GAG GTG GCC CTC CTG GAG GCG GGA	1140
glu arg leu ala arg arg ser asp ala leu ser leu glu val ala leu leu glu ala gly	(337)
AGG GCC CTG GCC GAG GCC CTA CCC CAG CCC AGC GGC GCT CCT TCC CCA GAG GTC GGC	1200
arg ala leu ala ala glu ala leu pro gln pro thr gly ala pro ser pro glu val gly	(357)
CCC AAG CCG GAA AGC CCC CCG ACC CCG GAA CCC CCA AGG CCC GAG GAG GCG CCC GAC CTG	1260
pro lys pro glu ser pro pro thr pro pro glu pro arg pro glu ala pro asp leu	(377)
CGG GAG CGG TGG CGG GCC TTC CTC GAG GCC CTC AGG CCC ACC CTA CGG GCC TTC GTG CGG	1320
arg glu arg trp arg ala phe leu glu ala leu arg pro thr leu arg ala phe val arg	(397)
GAG GCC CGC CGC GAG GTC CCG GAA GGC CAG CTC TGC CTC GCT TTC CCC GAG GAC AAG GCC	1380
glu ala arg pro glu val arg glu gly gln leu cys leu ala phe pro glu asp lys ala	(417)
TTC CAC TAC CGC AAG GCC TCG GAA CAG AAG GTG AGG CTC CTC CCC CTG GCC CAG GCC CAT	1440
phe his tyr arg lys ala ser glu gln lys val arg leu leu pro leu ala gln ala his	(437)
frameshift site	
TTC GGG GTG GAG GAG GTC GTC CTC GAG GGA GAA AAA AAA AGC CTG AGC CCA AGG	1500
phe gly val glu glu val leu val leu glu gly glu lys lys ser leu ser pro arg	(457)

FIG.4B-1

CCC CGC CCG GCC CCA CCT CCT GAA GCG CCC GCA CCC CCG GGC CCT CCC GAG GAG GAG GTA	1560
pro arg pro ala pro pro pro glu ala pro ala pro pro gly pro pro glu glu val	(477)
GAG GCG GAG GAA GCG GCG GAG GAG GCC CCG GAG GAG GCG TTT AGG CCG GTG GTC CGC CTC	1620
glu ala glu glu ala ala glu glu ala pro glu glu ala leu arg arg val val arg leu	(497)
CTG GGG GGG GCG GTG CTC TGG GTG CCG CCG AGG ACC CCG GAG GCG CCG GAG GAG GAA	1680
leu gly gly arg val leu trp val arg arg pro arg thr arg glu ala pro glu glu glu	(517)
CCC CTG AGC CAA GAC GAG ATA GGG GGT ACT GGT ATA TAA	1740
pro leu ser gln asp glu ile gly thr gly ile *	(529)
CGACCTCGGA CAAGAGACCG TGGACAACAT CCTCAAGCGC CTCCGCCGTA TTGAGGGCCA	1820
GGTGCGGGGG CTCCAGAAGA TGGTGGCCGA GGGCCGCCCC TGCAGCAGG TCCTCACCCA	1880
GATGACCGCC ACCAAGAAGG CCATGGAGGC GGCGGCCACC CTGATCCTCC ACGAGTTCCT	1940
GAACGTCTGC GCCGCCGAGG TCTCCGAGGG CAAGGTGAAC CCCAAGAAGC CCGAGGAGAT	2000
CGCCACCATG CTGAAGAAGT TCATCTA	2027

FIG.4B-2

GGG	CAG	GAG	CAC	GTG	AGC	GCC	CTC	TAC	CGC	CGC	TTC	CGC	CCC	CTC	ACC	TTC	CAG	GAG	GTG	GTG	51
GCC	TAC	CTC	TTC	TCC	GTG	GGG	CCC	AGG	GGC	CTC	AAG	GCC	ATC	CGG	GAG	GGG	AGG	CTC	GCC	CAG	111
ATG	GCG	GTG	GGG	TGC	CAG	GGG	GAA	GAC	CCC	GTG	GAC	ATT	TGC	GGG	ACC	AGC	AGG	CTC	CTC	GCC	171
GtG	CAG	AGG	GGC	GCC	CAC	GGG	GAC	GTG	ATC	AGG	GAC	ATC	GAC	GGG	GTG	TGC	CAC	TGC	CAG	GCG	231
GAG	GAC	GTG	CGG	GAG	CTG	AGG	GAA	AGG	ATC	AGG	CAC	CTC	GCC	CTC	CTC	TCT	GCC	CCC	AGG	AAG	291
GTC	TTC	ATC	CTG	GAC	GAG	GCC	CAC	ATG	CTC	ATC	TCC	AAA	AGC	GCC	TTC	AAC	GCC	CTC	CTC	AAG	351
ACC	CTG	GAG	GAG	CCC	CCG	CCC	CAC	GTG	CTC	CTC	TTC	GTG	TTC	GCC	ACC	ACC	GAG	CCC	GAG	AGG	411
ATG	CCC	CCC	ACC	ATC	CTC	CTC	TCC	CGC	ACC	CAG	CAC	TTC	CGC	TTC	CGC	CGC	CTC	ACG	GAG	GAG	471
GAG	ATC	GCC	TTT	AAG	CTC	CTC	CGC	ATC	CTG	CGC	GAG	GCC	GTG	GGG	CGG	GAG	GCG	GAG	GAG	GAG	531
GCC	CTC	CTC	CTC	CTC	GCC	CGC	CTG	CGC	GAC	GAC	GGG	GCC	CTT	AGG	GAC	GCG	GAA	AGC	CTC	CTG	591
GAG	CGC	TTC	CTC	CTC	CTG	GAA	GGC	GGC	CCC	CTC	ACC	CGG	AAG	GAG	GTG	GAG	CGC	GCC	CTA	GGC	651
TCC	CCC	CCA	GGG	ACC	GGG	GTG	GCC	GAG	ATC	ATC	GCC	GCC	TCC	CTC	GCG	AGG	GGG	AAA	ACG	GCG	711
GAG	GCC	CTG	GGC	CTC	CTC	GCC	CGG	CTC	TAC	CTC	GGG	GAA	GGG	TAC	GCC	CCG	AGG	AGC	CTG	GTC	771
TCG	GGC	CTT	TTG	GAG	GTG	GGG	TTT	CGG	GAA	GGC	CTC	TAC	GCC	GCC	TTC	GGC	CTC	GCG	GGA	ACC	831
CCC	CTT	CCC	GCC	CCG	CCC	CCC	CAG	GCC	CTG	ATC	GCC	GCC	ATG	ACC	GCC	CTG	GAC	GAG	GCC	ATG	891
GAG	CGC	CTC	GCC	CGC	GAG	CGC	TCC	GAC	GCC	TTA	AGC	CTG	GAG	GTG	GCC	CTC	CTG	GAG	GCG	GGA	951
AGG	GCC	CTG	GCC	GCC	GAG	GCC	CTA	CCC	CAG	CCC	CCC	ACG	GGC	GCT	CCT	TCC	CCA	GAG	GTC	GCG	1011
CCC	AAG	CCG	GAA	AGC	CCC	CCC	ACC	CGG	GAA	CCC	CCC	CCA	AGG	CCC	GAG	GAG	GCG	CCC	GAC	CTG	1131
CGG	GAG	CGG	TGG	CGG	GCC	TTC	CTC	CTC	GAG	GCC	CTC	AGG	CCC	ACC	CTA	CGG	GCC	TTC	GTG	CGG	1191
GAG	GCC	CGC	CGC	GAG	GTC	CGG	GAA	GGC	CAG	GGC	CTC	TGC	CTC	GCT	TTC	CCC	GAG	GAC	AAG	GCC	1251
TTC	CAC	TAC	CGC	AAG	GCC	TCC	GAA	CAG	AAG	CTC	GTG	AGG	CTC	CTC	CCC	CTG	GCC	CAG	GCC	CAT	1311
TTC	GGG	GTG	GAG	GAG	GTC	GTC	CTC	CTC	CTG	CTG	GAG	GGA	GAA	AAA	AGC	CTG	AGC	CCA	AGG	AGG	1371
CCC	CGC	CCG	GCC	CCA	CCT	CCT	GAA	GCG	CCC	CCC	GCA	CCC	CCG	GGC	CCT	CCC	GAG	GAG	GTA	GTA	1431
GAG	GCG	GAG	GAA	GCG	GCG	GAG	GAG	GAG	GCC	CCG	GAG	GCC	TTG	AGG	CGG	GTG	GTC	CGC	CTC	CTC	1491
CTG	GGG	GGG	CGG	GTG	CTC	TGG	GTG	CGG	CGG	ACC	CGG	GAG	CGG	CGG	GAG	GCG	CCG	GAG	GAG	GAA	1551
CCC CTG AGC CAA GAC GAG ATA GGG GGT ACT GGT ATA TAA (1590)																					

FIG.4C

Met ser ala leu tyr arg arg phe arg pro thr phe gln glu val val gly gln glu 20
his val lys glu pro leu lys ala ile arg glu gly arg leu ala gln ala tyr leu 40
phe ser gly pro arg gly val gly lys thr thr thr thr thr thr thr thr thr thr 60
gly cys gln gly glu asp pro pro cys gly val cys pro his cys gln ala val gln arg 80
gly ala his pro asp val val asp ile leu ala pro ala ala ser asn ser val glu asp val 100
arg glu leu arg glu arg ile his leu ala pro leu ser ala pro arg lys val phe ile 120
leu asp glu ala his met leu ser lys ser ala phe asn ala leu leu lys thr leu glu 140
glu pro pro pro his val leu phe val phe ala thr thr glu pro glu arg met pro pro 160
thr ile leu ser arg thr gln his phe arg phe arg leu thr glu glu ala leu ala 180
phe lys leu arg arg ile leu glu ala val gly arg glu ala glu glu ala leu leu 200
leu leu ala arg leu ala asp gly ala leu arg asp ala glu ser leu leu glu phe 220
leu leu glu gly pro leu thr arg lys glu val glu arg ala leu gly ser pro pro 240
gly thr gly val ala glu ile ala ala ser leu ala arg gly lys thr ala glu ala leu 260
gly leu ala arg arg leu tyr gly glu tyr ala phe gly leu ala gly thr pro leu 280
leu glu val phe arg glu gly leu tyr ala ala phe ala glu ala met glu arg leu 300
ala pro pro gln ala leu ile ala ala met thr ala leu leu glu ala gly arg leu 320
ala arg arg ser asp ala leu ser leu glu val ala leu leu glu ala gly arg ala 340
ala ala glu ala leu pro pro glu pro thr gly ala pro glu pro asp leu arg glu 360
glu ser pro pro thr pro glu pro pro arg pro glu glu ala phe val arg glu arg 380
trp arg ala phe leu glu ala leu arg pro thr leu arg ala phe val arg glu arg 400
pro glu val arg glu gly gln leu cys leu ala phe pro glu asp lys ala phe his tyr 420
arg lys ala ser glu gln lys val arg leu leu pro leu ala gln ala his phe gly val 440
glu glu val val leu val leu glu gly glu lys ser leu ser pro arg pro arg pro 460
ala pro pro glu ala pro ala pro pro gly pro pro glu glu val glu ala glu 480
glu ala ala glu ala pro glu ala leu arg val val arg leu leu gly gly 500
arg val leu trp val arg arg thr arg glu ala pro glu glu pro leu ser 520
gln asp glu ile gly gly thr gly ile 529

FIG. 4D

Met	ser	ala	leu	tyr	arg	arg	phe	arg	pro	leu	thr	phe	gln	glu	val	gly	gln	glu	20		
his	val	lys	glu	pro	leu	lys	ala	ala	ile	arg	glu	gly	arg	leu	ala	gln	ala	tyr	leu	40	
phe	ser	gly	pro	arg	gly	val	gly	lys	thr	thr	thr	ala	arg	leu	ala	met	ala	ala	val	60	
gly	cys	gln	gly	glu	asp	pro	pro	cys	gly	val	cys	pro	his	cys	gln	ala	val	gln	arg	80	
gly	ala	his	pro	asp	val	val	asp	ile	asp	ala	ala	ser	asn	ser	val	glu	asp	val	100		
arg	glu	leu	arg	glu	arg	ile	his	leu	ala	pro	leu	ser	ala	pro	arg	lys	val	phe	ile	120	
leu	asp	glu	ala	his	met	leu	ser	lys	ser	ala	phe	asn	ala	leu	leu	lys	thr	leu	glu	140	
glu	pro	pro	pro	his	val	leu	phe	val	phe	ala	thr	thr	glu	pro	glu	arg	met	pro	pro	160	
thr	ile	leu	ser	arg	thr	gln	his	phe	arg	phe	arg	arg	leu	thr	glu	glu	ile	ala	ala	180	
phe	lys	leu	arg	arg	ile	leu	glu	ala	val	gly	arg	glu	ala	glu	glu	ala	leu	leu	leu	200	
leu	leu	ala	arg	leu	ala	asp	gly	ala	leu	arg	asp	ala	glu	ser	leu	leu	glu	arg	phe	220	
leu	leu	leu	glu	gly	pro	leu	thr	arg	lys	glu	val	glu	arg	ala	leu	gly	ser	pro	pro	240	
gly	thr	gly	val	ala	ala	glu	ile	ala	ala	ser	leu	ala	arg	gly	lys	thr	ala	glu	ala	leu	260
gly	leu	ala	arg	arg	leu	leu	tyr	gly	gly	leu	tyr	ala	pro	arg	ser	leu	val	ser	gly	leu	280
leu	glu	val	phe	arg	glu	glu	gly	leu	tyr	ala	ala	phe	gly	leu	ala	gly	thr	pro	leu	pro	300
ala	pro	pro	gln	ala	ala	leu	ile	ala	ala	met	thr	ala	leu	asp	glu	ala	met	glu	arg	leu	320
ala	arg	arg	ser	asp	ala	leu	ser	leu	leu	glu	val	ala	leu	leu	glu	ala	gly	arg	ala	leu	340
ala	ala	glu	ala	leu	pro	gln	pro	pro	thr	gly	ala	pro	ser	pro	glu	val	gly	pro	lys	pro	360
glu	ser	pro	pro	thr	pro	glu	pro	pro	arg	pro	glu	glu	ala	pro	asp	leu	arg	glu	arg	380	
trp	arg	ala	phe	leu	glu	ala	ala	leu	arg	pro	thr	leu	arg	phe	val	arg	glu	ala	arg	400	
pro	glu	val	arg	glu	gly	gln	lys	val	cys	leu	ala	phe	pro	glu	asp	lys	ala	phe	his	tyr	420
arg	lys	ala	ser	glu	gln	lys	val	arg	leu	leu	pro	leu	ala	gln	ala	his	phe	phe	gly	val	440
glu	glu	val	val	leu	val	leu	glu	gly	glu	lys	lys	lys	pro	asp	pro	lys	ala	ala	pro	pro	460
gly	pro	thr	ser																	464	

FIG.4E

Met ser ala leu tyr arg arg phe arg pro leu thr phe gln glu val val gly gln glu 20
 his val lys glu pro leu arg leu lys ala ile arg pro leu thr glu gly arg leu ala gln ala tyr leu 40
 phe ser gly pro arg gly val pro cys gly val cys pro his asn ser ala pro arg lys val phe ile 120
 gly cys gln glu asp pro pro cys gly val cys pro his asn ser ala pro arg lys val phe ile 120
 arg ala his pro asp val val asp ile his leu ala pro leu phe ala thr glu pro glu arg met pro pro 160
 leu asp glu ala his met leu ser lys val phe leu thr gln his phe arg phe arg arg leu thr glu arg met pro pro 160
 glu pro pro pro his val leu phe val phe ala thr glu pro glu arg met pro pro 160
 thr ile leu ser arg thr gln his phe arg phe arg arg leu thr glu pro glu arg met pro pro 160
 phe lys leu arg arg ile leu glu ala val gly arg phe arg arg leu thr glu pro glu arg met pro pro 160
 leu leu ala arg leu ala asp gly ala leu arg lys glu val ala arg pro arg ser leu val ser gly leu 280
 leu thr gly val ala glu ile ala ala ser leu ala arg pro arg ser leu val ser gly leu 280
 gly leu ala arg arg leu tyr gly leu tyr ala ala phe leu asp glu ala val gly thr pro leu pro 300
 ala pro pro gln ala leu ile ala ala met thr ala pro leu leu leu leu leu leu leu leu leu leu 320
 ala arg ser asp ala leu pro gln pro thr gly ala pro leu leu leu leu leu leu leu leu leu leu 340
 ala ala glu ala leu pro pro glu pro pro arg pro thr leu arg ala phe val arg glu ala arg 400
 glu pro ala phe leu glu ala leu cys leu ala phe pro glu asp lys ala phe his tyr 420
 arg lys ala ser glu gln lys val arg leu leu pro leu ala gln ala his phe gly val 440
 glu glu val val leu val leu glu gly glu lys lys lys ala 454

FIG.4F

E.coli	MSYQVLARKWRPQTADVVGQEHVLTALANGLSRIHAYLFSGTRGVGKTSIARLLAK	60
H.inf.K.....II.....KDN.L.....F..	60
B.sub.A.Y.VF...R.E.....ITKT.Q.A.LQKKFS.....P.T....A.KIF..	60
C.cres.	DA.T.....Y.R..E.LI...AMVRT...AF.T...A..FMLT.V.....TT.....R	113
M.gen.	-MH..FYQ.Y..IN.KQTL...SIRKI.V.AINRDKLPNG.I...E.T...TF.KII...	59
T.th.	--VSA.Y.RF..L..QE.....KEP.LKAIRE..LAQ.....P.....TT.....M	58

ATP site

Zn⁺⁺ finger

* * *

E.coli	GLNCET----	GITATPCGVCDNCREIEQGRFVDLIEIDAASRTKVEDTRDLDNVQYAPA	116
H.inf.VH----	V.....E.E.KA...N.I.....E.....K.V	116
B.sub.	AV...H----	APVDE..NE.AA.KG.TN.SIS.V.....NNG.DEI..IR.K.KF..S	116
C.cres.	A..Y..DTVK.PSVDLTTEGYH..S.IE..HM.VL.L.....DEM.E...G.R...V	173	
M.gen.	AI..LN----	WDQIDV.NS..V.KS.NTNSAI.IV.....KNGIN.I.E.VE..FNH.F	115
T.th.	AVG.QG-----	EDP.....PH.QAVQR.AHP.VVD.....NNS...V.E.RERIHL..L	112

E.coli	RGRFKVYLIDEVHMLSRHSFNALLKTLEEPPEHVKFLLATDPQKLPVTILSRCLQFHLK	176
H.inf.	V.....Y.....	176
B.sub.	AVTY...I.....IGA.....CI.I...E.H.I.L.I...QR.DF..	176
C.cres.	EA.Y...I.....TAA.....P.A..IF...EIR.V.....QR.D.R	233
M.gen.	TEKK...IL..A...TTQ.WGG.....S.PY.L.IFT..EFN.I.L...QS.FF..	175
T.th.	SAPR..FIL..A....KSA.....P..L.VF...E.ERM.P.....TQH.RFR	172

FIG.5A

E.coli	ALDVEQIRHQLEHIILNEEHIAHEPRALQLLARAAGSLRDALSITDQAIASGDGQ--VST	234
H.inf.	...ET..SQH.A...TQ.N.PF.DP..VK..K..Q..I..S.....M..R.--.TN	234
B.sub.	RITSQA.VGRMNK.VDA.QLQV.EGS.EII.S..H.GM.....L....SFSGDI--LKV	234
C.cres.	RVEPDVLVKHFDR.SAK.GARI.MD..A.I.....V..G...L....VQTERGQT.TS	293
M.gen.	KITSDL.LER.ND.AKK.K.KI.KD..IKI.DLSQ.....G...L..LAI.LIVKKL.LL	235
T.th.	R.TE.E.AFK.RR..EAVGREA.EE..L...L.D.A....E..LERFLLLEGP---LTR	229
E.coli	QAVSAMLGTLDDQALSLVEAMVEANGERVMA LINEAAARGIEWEALLVEMLGLLHRIAM	294
H.inf.	NV..N...L...NYSVDILY.LHQG...LL.RTLQRV.DAAGD.DK..G.CAEK..Q..L	294
B.sub.	EDALLIT.AVSQLYIGK.AKSLHDK.VSDALETL..LLQQ.KDPAK.IED.IFYFRDMLL	294
C.cres.	TV.RD...LA.RS.TIA.Y.HVMAGKTKDALEGFRALWGF.ADPVVMLDV.DHC.AS.V	353
M.gen.	MLKKHLISLIEMQN.L.KQFYQ.I	260
T.th.	KE.ERA..SPPGTGVAEIAASLARGKTAEALG.ARRLYGE.YAPRS.VSGL.EVFREGLY	289

FIG.5B

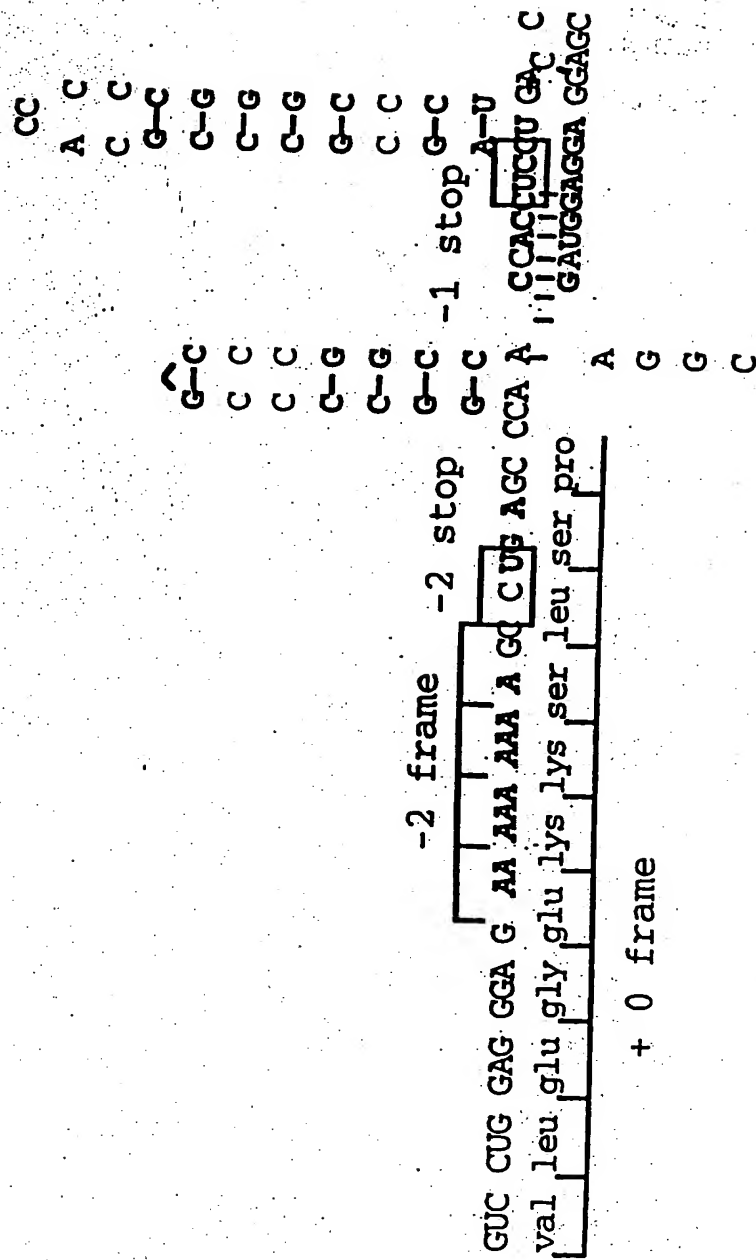


FIG.6

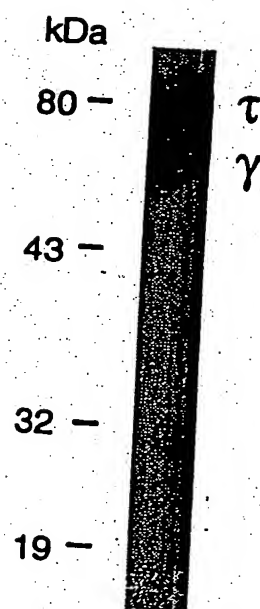
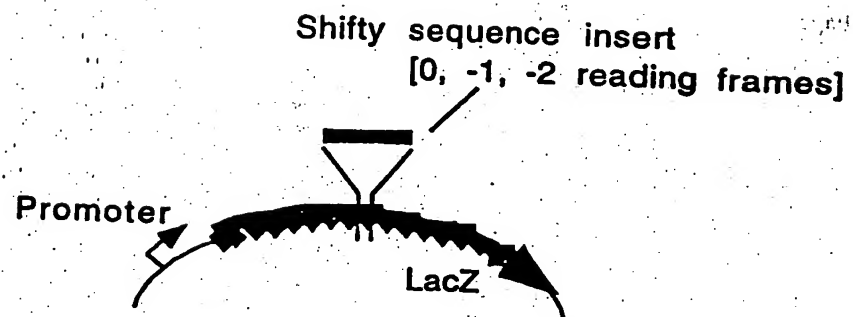


FIG.7

FIG.8A



	Reading frame	Blue	White
Shifty sequence	0	+	
	- 1	+	
	- 2	+	
Mutant sequence	0	++	
	- 1		+
	- 2		+

FIG.8B

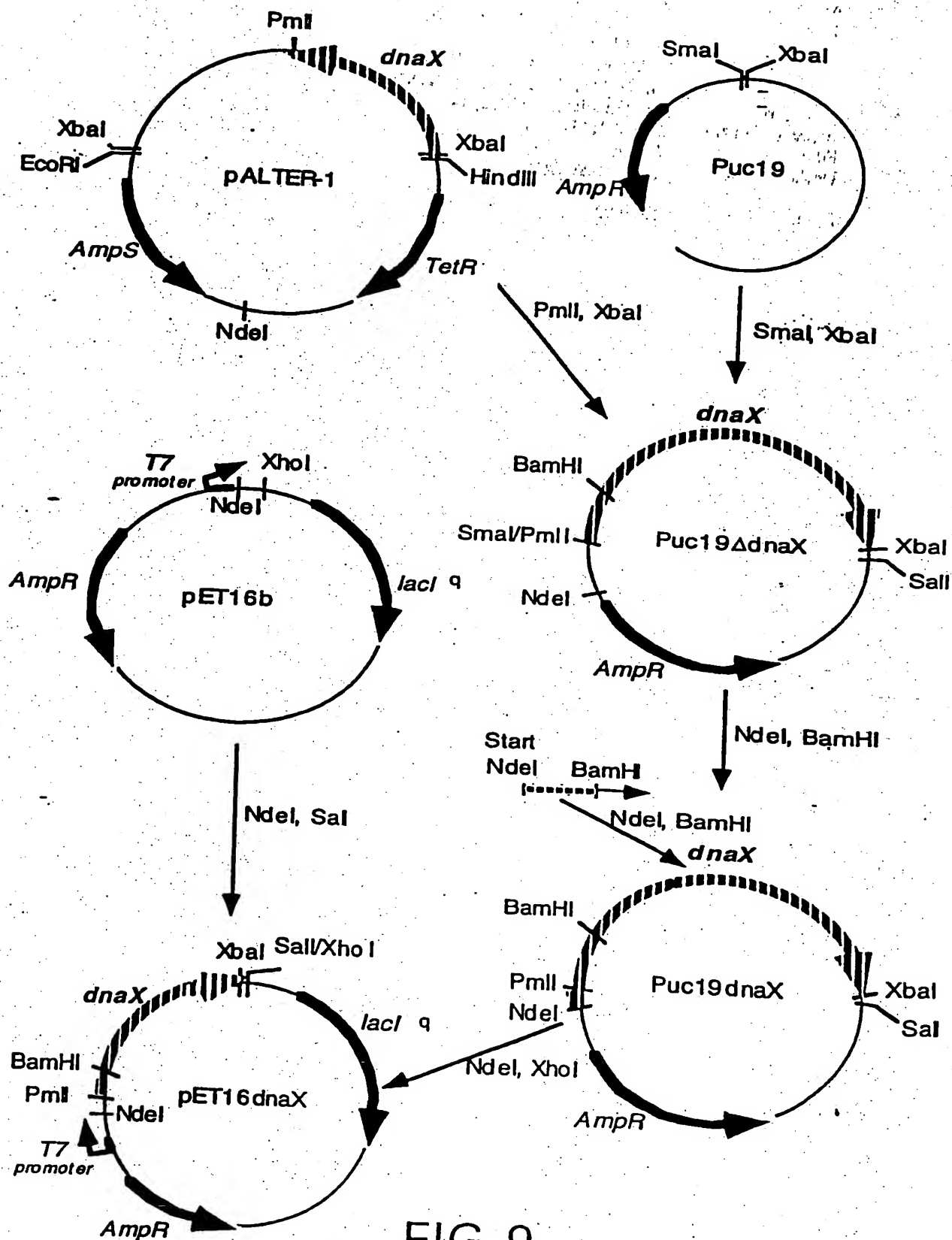


FIG.9

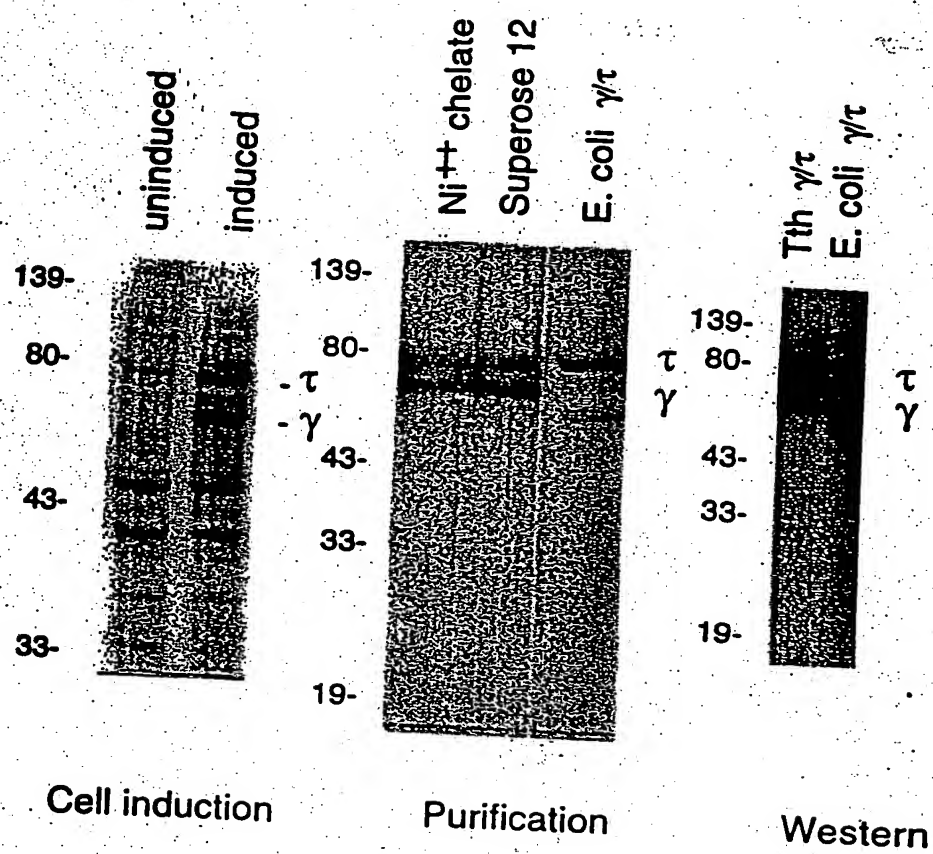


FIG. 10A FIG. 10B FIG. 10C

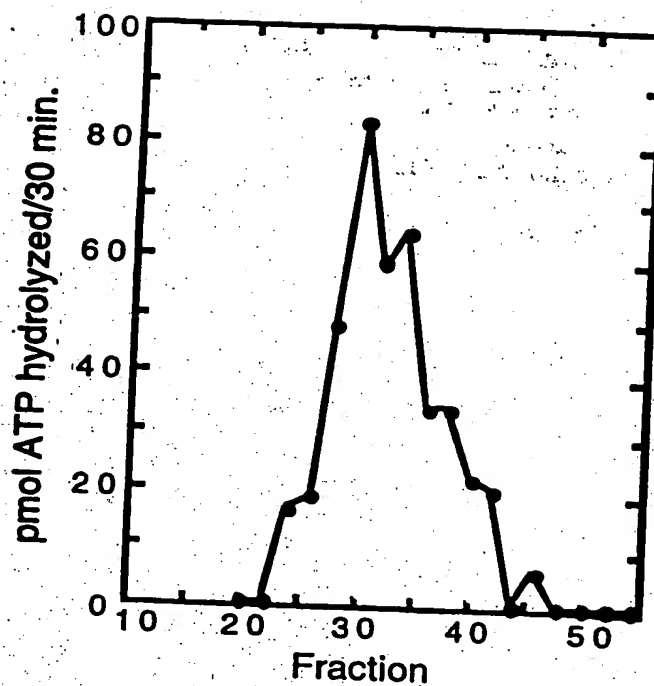


FIG.11A

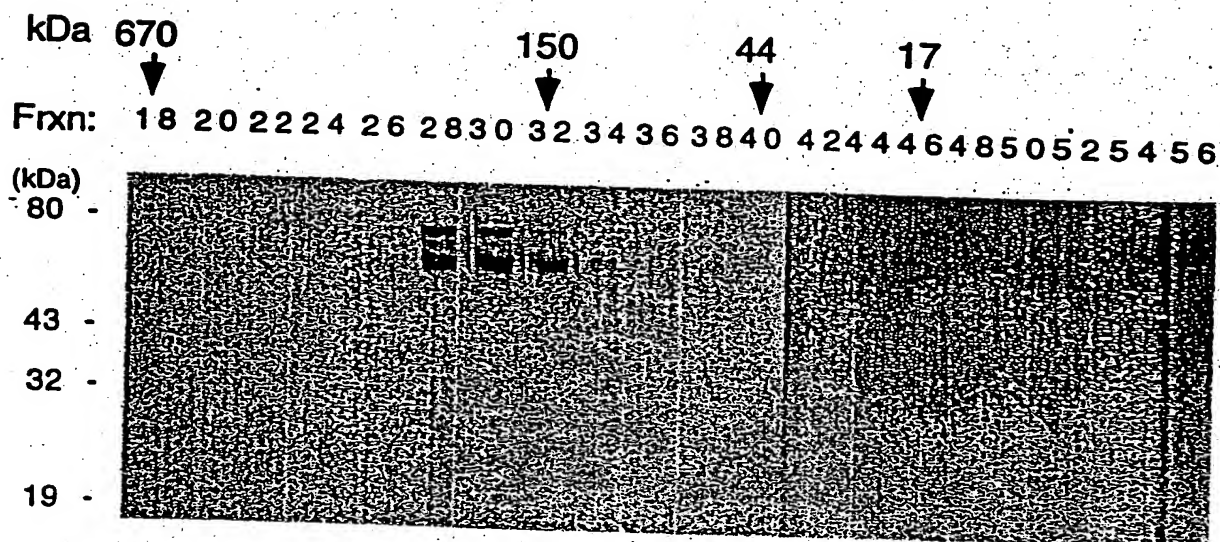


FIG.11B

FIG.12A

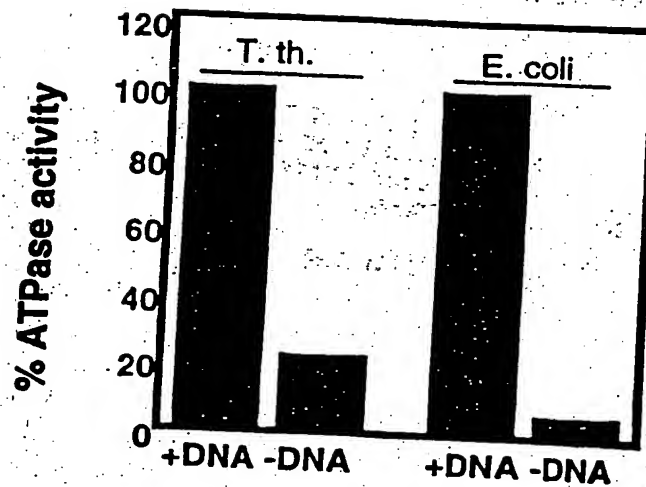


FIG.12B

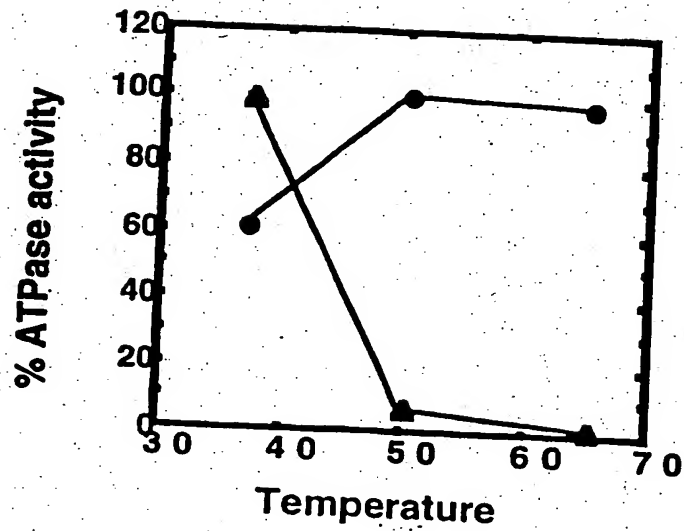


FIG.12C

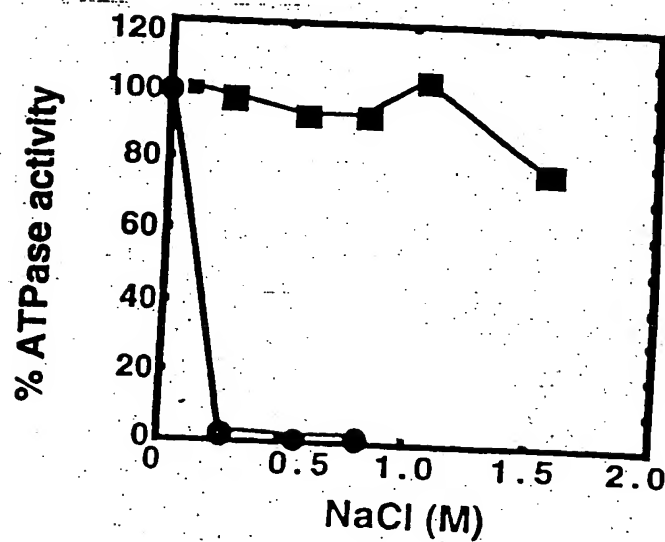


FIG.13A

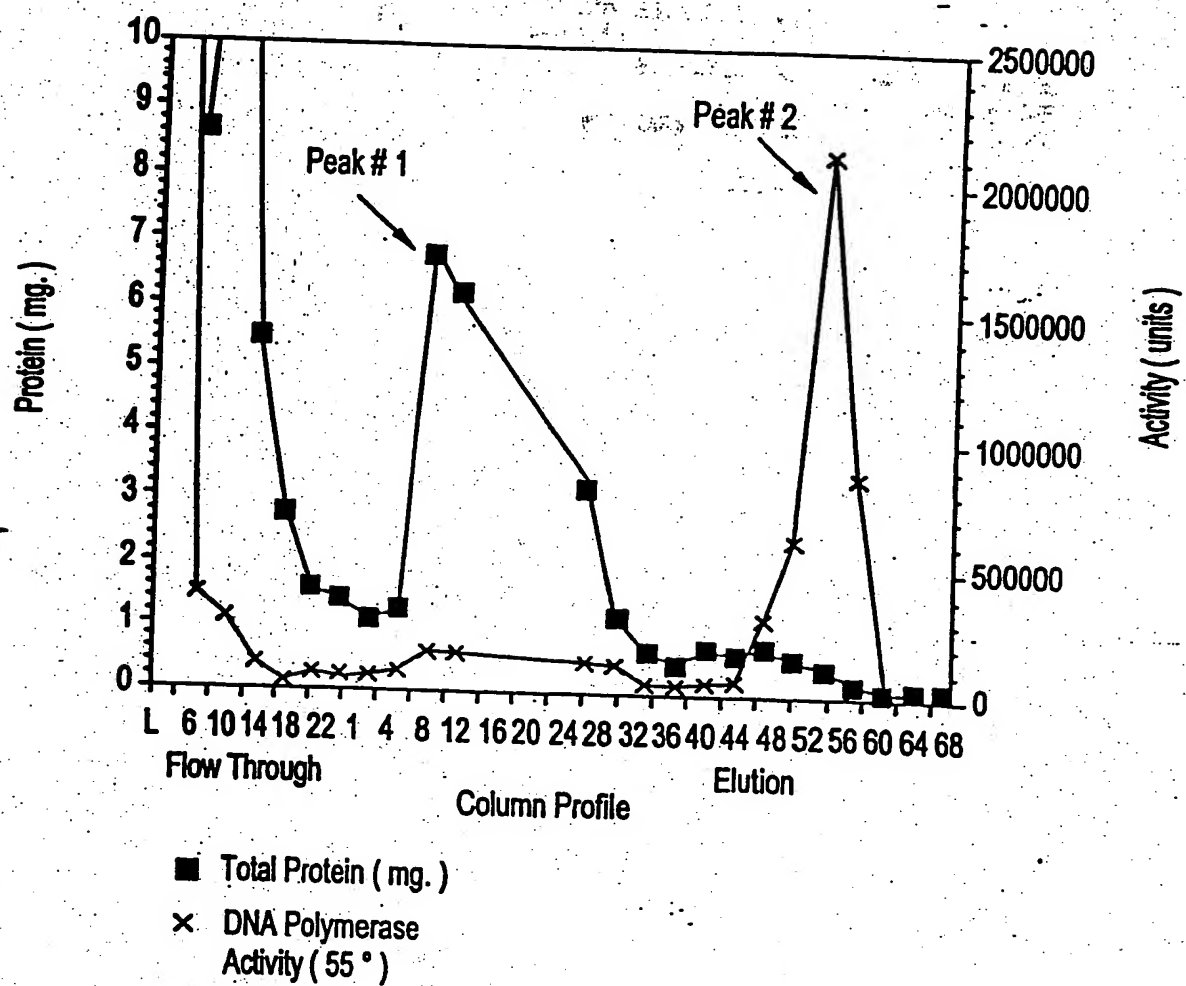


FIG.13B

ATP Agarose Step Column

FIG.13C

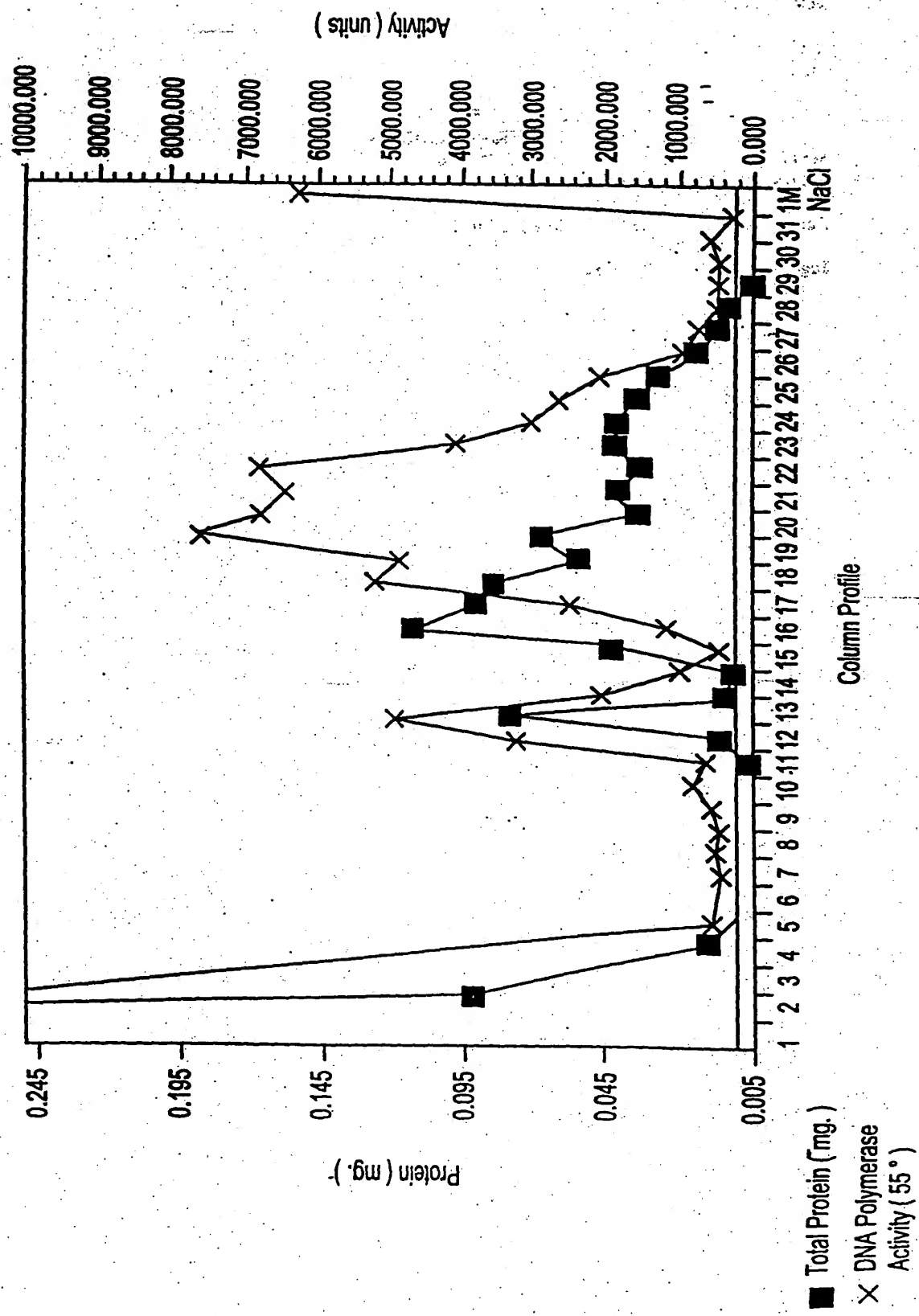


FIG.14A

load FT 9 10 11 12 13 14 15 16 17 18 19 $E. coli$
 α γ δ

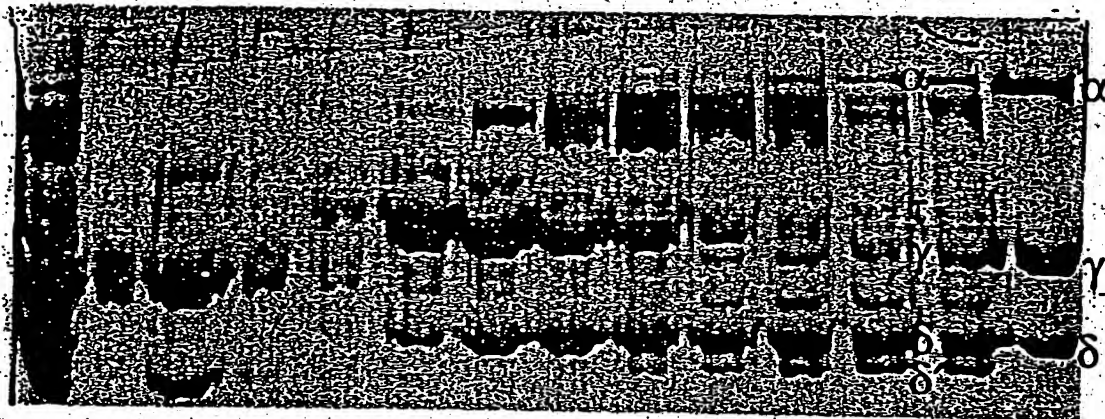
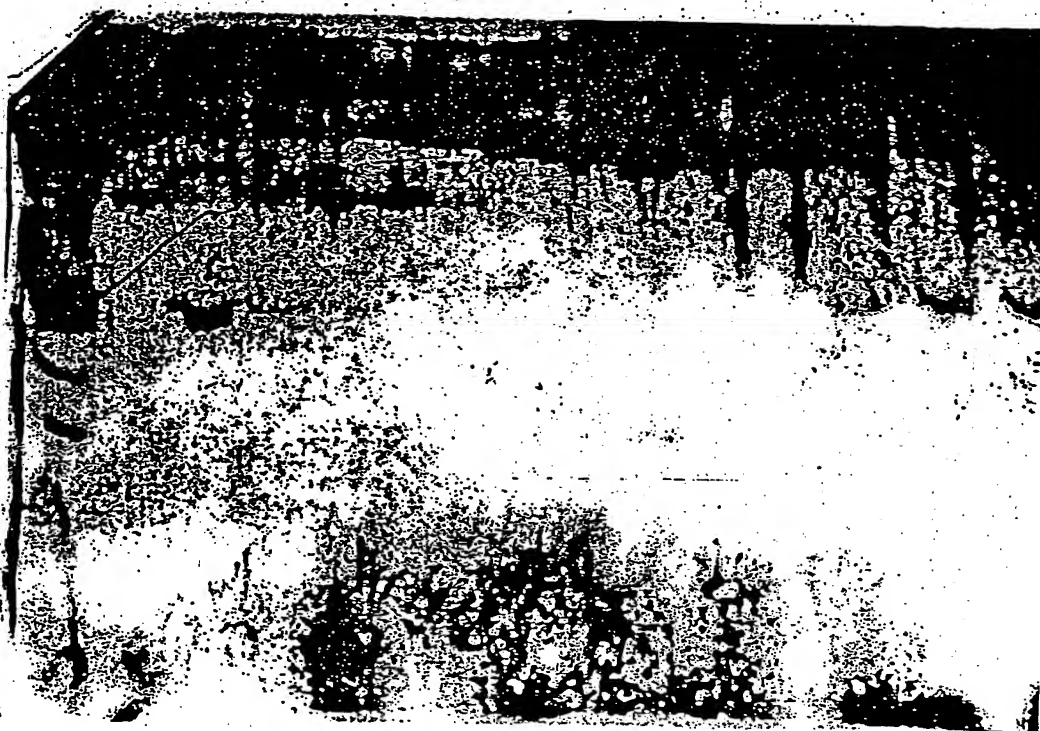


FIG.14B

load FT 9 10 11 12 13 14 15 16 17 18 19



Alignment of TTH1 with alphas subunits of other organisms.

E.coli	DRYFLELIRTGRPDEESYLHAAVELAEARGLPVV	197	(ID#72)
V.chol.	DHFYLELIRTGRADEESYLHFALDVAEQYDLPVV	197	(ID#73)
H.inf.	DHFYLALSRTPGRPNEERYIQAAKLAEKCDLPLV	197	(ID#74)
R.prow.	DRFYFEIMRHDLPPEEQFIENSYIQIASELSIPIV	195	(ID#75)
H.pyl.	DDFYLEIMRHGILDQRFIDEQVIKMSLETGLKII	213	(ID#76)
S.sp.	DDYYLEIQDHGSVEDRLVNINLVKIAQELDIKIV	202	(ID#77)
M.tub.	DNYFLELMDHGLTIERRVRDGLLEIGRALNIPPL	220	(ID#78)
T.th.	FFIEIQNHGLSEQK		(ID#61)

FIG.15A

Alignment of TTH2 with alphas subunits of other organisms.

E.coli	NKRRAKNGEPPLDIAAIPLDDKKSFMDLQSRSETTAVFQLESRGMKD	618	(ID#79)
V.chol.	NPRLKAGKPPVRIEAIPLDDARSFRNLQDAKTTAVFQLESRGMKKE	618	(ID#80)
H.inf.	NVRMVREGKPRVDIAAIPLDDPESFELLKRSETTAVFQLESRGMKD	618	(ID#81)
R.prow.	CKKLLKEQGIKIDFDDMTFDDKKTYQMLCKGKGVGVFQFESIGMKD	624	(ID#82)
H.pyl.	LKIIKTQHKISVDFLSLMDDDPKVYKTIQSGDTVGIFQIES-GMFQ	648	(ID#83)
S.sp.	QERKALQIRARTGSKKLPDDVKKTHKLLLEAGDLEGIFQLESQGMKQ	643	(ID#84)
M.tub.	IDNVRANRGIDLDESVPPLDDKATYELLGRGDTLGVFQLDGGPMRD	646	(ID#85)
T.th.	RVELDYDALTLDD		(ID#60)

FIG.15B

ATGGGCCGGGAGCTCCGCTTCGCCCACCTCCACCAGCACA	
CCCAGTTCTCCCTCCTGGACGGGGCGGCGAAGCTTTCCGA	
CCTCCTCAAGTGGGTCAAGGAGACGACCCCGAGGACCCC	120
GCCTTGGCCATGACCGACCACGGCAACCTCTTCGGGGCCG	
TGGAGTTCTACAAGAAGGCCACCGAAATGGGCATCAAGCC	
CATCCTGGGCTACGAGGCCTACGTGGCGGCGGAAAGCCGC	240
TTTGACCGCAAGCGGGGAAAGGGCCTAGACGGGGGCTACT	
TTCACCTCACCTCCTCGCCAAGGACTTCACGGGGGTACCA	
GAACCTGGTGCGCCTGGCGAGCCGGGCTTACCTGGAGGGG	360
TTTTACGAAAAGCCCCGGATTGACCGGGAGATCCTGCGCG	
AGCACGCCGAGGGCCTCATCGCCCTCTCGGGGTGCCTCGG	
GGCGGAGATCCCCCAGTTCATCCTCCAGGACCGTCTGGAC	480
CTGGCCGAGGCCCCGGCTCAACGAGTACCTCTCCATCTTCA	
AGGACCGCTTCTTCATCGAGATCCAGAACCACGGCCTCCC	
CGAGCAGAAAAAGGTCAACGAGGTCTCAAGGAGTTCGCC	600
CGAAAGTACGGCCTGGGGATGGTGGCCACCAACGACGGCC	
ATTACGTGAGGAAGGAGGACGCCCCGCGCCACGAGGTCCT	
CCTCGCCATCCAGTCCAAGAGCACCTGGACGACCCCGGG	720
CGCTGGCGCTTCCCCTGCGACGAGTTCTACGTGAAGACCC	
CCGAGGAGATGCGGGCCATGTTCCCCGAGGAGGAGTGGGG	
GGACGAGCCCTTTGACAACACCGTGGAGATCGCCCCGATG	840
TGCAACGTGGAGCTGCCCATCGGGGACAAGATGGTCTACC	
GAATCCCCCGCTTCCCCCTCCCCGAGGGGCGGACCGAGGC	
CCAGTACCTCATGGAGCTCACCTTCAAGGGGCTCCTCCGC	960
CGCTACCCGGACCGGATCACCGAGGGCTTCTACCGGGAGG	
TCTTCCGCCTTTTGGGGAAGCTTCCCCCCCACGGGGACGG	
GGAGGCCTTGGCCGAGGCCTTGGCCCAGGTGGAGCGGGAG	1080
GCTTGGGAGAGGCTCATGAAGAGCCTCCCCCCTTGGCCG	
GGGTCAAGGAGTGGACGGCGGAGGCCATTTTCCACCGGGC	
CCTTTACGAGCTTTCCGTGATAGAGCGCATGGGGTTTCCC	1200
GGCTACTTCTCATCGTCCAGGACTACATCAACTGGGCCC	
GGAGAAACGGCGTCTCCGTGGGGCCCCGGCAGGGGGAGCGC	
CGCCGGGAGCCTGGTGGCCTACGCCGTGGGGATCACCAAC	1320
ATTGACCCCCCTCCGCTTCGGCCTCCTCTTTGAGCGCTTCC	
TGAACCCGGAGAGGGTCTCCATGCCCGACATTGACACGGA	
CTTCTCCGACCGGGAGCGGGACCGGGTGATCCAGTACGTG	1440
CGGGAGCGCTACGGCGAGGACAAGGTGGCCAGATCGGCA	
CCCTGGGAAGCCTCGCCTCCAAGGCCGCCCTCAAGGACGT	
GGCCCGGGTCTACGGCATCCCCACAAGAAGCGGAGGAA	1560
TTGGCCAAGCTCATCCCGGTGCAGTTCGGGAAGCCCAAGC	
CCCTGCAGGAGGCCATCCAGGTGGTGCCGGAGCTTAGGGC	
GGAGATGGAGAAGGACCCCAAGGTGCGGGAGGTCTTCGAG	1680
GTGGCCATGCGCCTGGAGGGCCTGAACCGCCACGCCTCCG	
TCCACGCCGCCGGGGTGGTGATCGCCGCCGAGCCCCTCAC	
GGACCTCGTCCCCCTCATGCGCGACCAGGAAGGGCGGCCC	1800
GTCACCCAGTACGACATGGGGGCGGTGGAGGCCTTGGGGC	
TTTTGAAGATGGACTTTTTTGGGCCTCCGCACCCTCACCTT	

FIG. 16A

CCTGGACGAGGTCAAGCGCATCGTCAAGGCGTCCCAGGGG	1920
GTGGAGCTGGACTACGATGCCCTCCCCCTGGACGACCCCA	
AGACCTTCGCCCTCCTCTCCCGGGGGGAGACCAAGGGGT	
CTTCCAGCTGGAGTCGGGGGGGATGACCGCCACGCTCCGC	2040
GGCCTCAAGCCGCGGCGCTTTGAGGACCTGATCGCCATCC	
TCTCCCTCTACCGCCCCGGGCCCCATGGAGCACATCCCCAC	
CTACATCCGCCGCCACCACGGGCTGGAGCCCGTGAGCTAC	2160
AGCGAGTTTCCCCACGCCGAGAAGTACCTAAAGCCCATCC	
TGGACGAGACCTACGGCATCCCCGTCTACCAGGAGCAGAT	
CATGCAGATCGCCTCGGCCGTGGCGGGGTACTCCCTGGGC	2280
GAGGCGGACCTCCTGCGGCGGTCCATGGGCAAGAAGAAGG	
TGGAGGAGATGAAGTCCCACCGGGGAGCGCTTCGTCCAGGG	
GGCCAAGGAAAGGGGCGTGCCCGAGGAGGAGGCCAACCGC	2400
CTCTTTGACATGCTGGAGGCCTTCGCCAACTACGGCTTCA	
ACAAATCCCACGCTGCCGCCCTACAGCCTCCTCTCCTACCA	
GACCGCCTACGTGAAGGCCCACTACCCCGTGAGTTTCATG	2520
GCCGCCCTCCTCTCCGTGGAGCGGCACGACTCCGACAAGG	
TGGCCGAGTACATCCGCGACGCCCGGGCCATGGGCATAGA	
GGTCTTCCCCCGGACGTCAACCGCTCCGGGTTTGAATTC	2640
CTGGTCCAGGGCCGGCAGATCCTTTTCGGCCTCTCCGCGG	
TGAAGAACGTGGGCGAGGCGGCGGCGGAGGCCATTCTCCG	
GGAGCGGGAGCGGGGCGGCCCTACCGGAGCCTCGGCGAC	2760
TTCTCAAGCGGCTGGACGAGAAGGTGCTCAACAAGCGGA	
CCCTGGAGTCCCTCATCAAGGCGGGCGCCCTGGACGGCTT	
CGGGGAAAGGGCGCGGCTCCTCGCCTCCCTGGAAGGGCTC	2880
CTCAAGTGGGCGGCCGAGAACCGGGAGAAGGCCCGCTCGG	
GCATGATGGGCCTCTTCAGCGAAGTGAGGAGCCGCCTTT	
GGCCGAGGCGCCCCCTGGACGAGATCACCCGGCTCCGC	3000
TACGAGAAGGAGGCCCTGGGGATCTACGTCTCCGGCCACC	
CCATCTTGCGGTACCCCGGGCTCCGGGAGACGGCCACCTG	
CACCCCTGGAGGAGCTTCCCCACCTGGCCCGGGACCTGCCG	3120
CCCCGTCTAGGGTCCTCCTTGCCGGGATGGTGGAGGAGG	
TGGTGCGCAAGCCCACAAAGAGCGGCGGGATGATGGCCCG	
CTTCGTCTCTCCGACGAGACGGGGGCGCTTGAGGCGGTG	3240
GCATTGCGCCGGGCCTACGACCAGGTCTCCCCGAGGCTCA	
AGGAGGACACCCCCGTGCTCGTCCTCGCCGAGGTGGAGCG	
GGAGGAGGGGGCGTGCGGGTGCTGGCCAGGCCGTTTGG	3360
ACCTACGAGGAGCTGGAGCAGGTCCCCCGGGCCCTCGAGG	
TGGAGGTGGAGGCCTCCCTCCTGGACGACCGGGGGGTGGC	
CCACCTGAAAAGCCTCCTGGACGAGCACGCGGGGACCCTC	3480
CCCCGTGTACGTCCGGGTCCAGGGCGCCTTCGGCGAGGCC	
TCCTCGCCCTGAGGGAGGTGCGGGTGGGGGAGGAGGCTGT	
AGGCGGCCGCGTGGTTCCGGGCCTACCTCCTGCCCCGACCG	3600
GGAGGTCTTCTCAGGGCGGCCAGGCGGGGGAGGCCCCAG	
GAGGCGGTGCCCTTCTAGGGGGTGGGCCGTGAGACCTAGC	
GCCATCGTTCTCGCCGGGGGCAAGGAGGCCTGGGCCCGAC	3720
CCCTTTTGG	

FIG. 16B

MGRELRF AHLHQHTQFSLLDGAPKLSDLLKWVEETTPEDP
 ALAMTDHGNLFGAVEFYKKATEMGIKPILGYEAYVAAESR
 FDRKRKGGLDGGYFHLTLLAKDFTGYQNLVRLASRAYLEG 120
 FYEKPRIDREILREHAEGLI ALSGCLGAEIPQFILQDRLD
 LAEARLNEYLSIFKDRFFIEIQNHGLPEQKKVNEVLKEFA
 RYKGLGMVATNDGHYVRKEDARAHEVLLAIQSKSTLDDPG 240
 ALALPCEEFYVKTPEEMRAMFPEEEVGGRSPLTTPWRSPPH
 VQGAAGTRWSTRIPRPLPEGRTEAQYLMELTFKGLLR
 RYPDRITEGFYREVFRLSGKLPPHGDGEALAEALAQVERE 360
 AWERLMSKSLPPLAGVKEWTAEAIFHRALYELSAIERMGFP
 GLLPHRPGHLHQLGPEKGVSVGPGRGGAAGSLVAYAVGITN
 IDPLRFGLLFRFLNPERVSMPDIDTDFSDRERDRVIQYV 480
 RERYGEDKVAQIGTIGSLASKAALKEVARVYGI PRKKAEE
 LAKLIPVQFGPKPLQEAIQVVP ELRAEMEKDPKVREVLE
 VAMRLEGLNRHASVHAGRGGVFSEPLTDLVPLCATRKGGP 600
 YTQYDMGAVEALGLLKMDFLGLRTL TFLDEVKRIVKASQG
 VELDYDALPLDDPKTFALLSRGETKGVFQLESGGMTATLR
 GLKPRRFEDLIAILSLYRPGPMEHIPTYIRRHGLEPVSY 720
 SEFPHAEKYLKPILDETYGIPVYQEQIMQIASAVAGYSLG
 EADLLRRSMGKKKVEEMKSHRERFVQAKERGVPEEEANR
 LFDMLEAFANYGFNKSHAAAYSLLSYQTAYVKAHY PVEFM 840
 AALLSVERHSDKVAEYIRDARAMGIEVLPPDVNRSGFDF
 LVQGRQILFGLSAVKNVGEAAAEAILRERERGGPYRSLGD
 FLKRLDEKVLNKRTLES LIKAGALDGFERARLLASLEGL 960
 LKWAAENREKARSGMMGLFSEVEEPPLAEAAPLDEITRLR
 YEKEALGIYVSGHPILRYPGLRETATCTLEELPHLARDLP
 PRSRVLLAGMVEEVVRKPTKSGGMMARFVLSDETGALEAV 1080
 AFGRAYDQVSPRLKEDTPVLVLAEVEREEGGVRVLAQAVW
 TYQELEQVPRALEVEVEASLPDDRGV AHLKSLLEHAGTL
 PLYVRVQGAFG EALLALREVRVGEEALGALEAAGFPAYLL 1200
 PNREVSPRLTGSGGPRGRALSTGLALKTYPIALPGGNEAL
 ARPLL

FIG. 16C

	Start1	Start2	3'-Exo I
T. th.	VERVVRTLLDGRFLLEEGVGLNEWRYPPFLEGEAVVLDLLETTGLAG-----LDEVIEVGLLRLEGG---RRLPF		
D. rad.		PWPQDVVVFDDLETTGSPA-----SAAIVEIGAVRIVGGQIDETLKF	
Bac. sub.	HGIKMIYGMEANLVDDGVPIAYNAAHRLLEEETYYVVFDDVETTGLSAV-----YDTIIELAAVKVKGGE--IIDKF		
H. inf.		MINPNRQIVLDTETTGMNQLGHAHYEGHCHIEIGAVELINRR-YTGNNX	
E. c.		MSTAITRQIVLDTETTGMNQIGAHSEGHKIIIEIGAVEVNNRR-LTGNNF	
H. pyl.	NLEYLKACGLNFIETSENLTILKNLKTPLKDEVFSFIDLETTGSCPI-----KHEILEIGAVQVKGGE--IINRF		

3'-Exo II

T. th.	QSLVR-PLPP---AEARSWNLT---GIPREALLEAPSLSEEVLEKAYPLRGDATLVIHNAAFDLGLFL-RPALEGLG
D. rad.	ETLVR-PTRPDGSMLSPWQAQRVHGISEDVMVRRAPAXKDVLPDFDFVDGSVVAHNVSPDGGFM-RAGAERLG
Bac. sub.	EAFAN-PHRP---LSATIIELT---GITDDMLQDAPDVVDVIRDFREWIGDDILVAHNASFDMGFL-NVAYKKLL
H. inf.	HIYIK-PDRP---XDPDAIKVH---GITDEMLADKPEFKEVAQDFLDYINGAELLIHNAFDDVGFMDYEFERKLN
E. c.	HVYLK-DRLV---DPEAFGVH---GIAVDFLLDKPTFAEVAVEFMDYIRGAELVIHNAAFDVGFM-DYEFSLLK
H. pyl.	ETLVKVKVSP-----DYIAELT---GITYEDTLNAPSAHEALQELRLFLGNSVFAHNAFNYNFLGRYFVEKLN

3'-Exo IIIC

T. th.	-----YRLENPVVDSLRLARRGLPGLRRYGLDALSEVLELPRRT--CHRALEDVERTLAVVHEVYMLT-----SG
D. rad.	-----LSWAPERELCTMQLSRRAPFRERTHNLTVLAERLGLLEFAPGGRHRSYGDVQVTAQAYLRILLELLG-----ER
Bac. sub.	E---VEKAKNPVIDTLELGRFLYPEFKNHLRLNTLCKKEDIELTQ--HHRAIYDTEATAYLLKMLKDA-----EK
H. inf.	-LNVKTDDICLVDTLQMARQMPGKRN-NLDALCDRLGIDNSKRTLHGALLDAEILADVILMMTGQTNLFDDEE
E. c.	RDIAKTNTFCKVTDLSLAVARKMFPKGKRN-SLDALCARYEIDNSKRTLHGALLDAQIILAELYLAMTGGQTSMAFAME
H. pyl.	-----CPLNLNKLCTDLSKRAILSMRY-SLSFLKELLGFGIEV--SHRAYADALASYKLFEICLLNLP--SYIKT

FIG.17

FIG.18A

ATGGTGGAGCGGGTGGTGCGGACCCTTCTGGACGGGAGGT 40
TCCTCCTGGAGGAGGGGGTGGGGCTTTGGGAGTGGCGCTA
CCCCTTTCCCCTGGAGGGGGAGGCGGTGGTGGTCCTGGAC 120
CTGGAGACCACGGGGCTTGCCGGCCTGGACGAGGTGATTG
AGGTGGGCCTCCTCCGCCTGGAGGGGGGGAGGCGCCTCCC 200
CTTCCAGAGCCTCGTCCGGCCCCCTCCCGCCCGCCGAAGCC
CGTTCGTGGAACCTCACCGGCATCCCCCGGAGGCCCTGG 280
AGGAGGCCCCCTCCCTGGAGGAGGTCTGGAGAAGGCCTA
CCCCCTCCGCGGCGACGCCACCTTGGTGATCCACAACGCC 360
GCCTTTGACCTGGGCTTCCTCCGCCCAGCCTTGGAGGGCC
TGGGCTACCGCCTGGAAAACCCCGTGGTGGACTCCCTGCG 440
CTTGGCCAGACGGGGCTTACCAGGCCTTAGGCGCTACGGC
CTGGACGCCCTCTCCGAGGTCTTGGAGCTTCCCCGAAGGA 520
CCTGCCACCGGGGCCCTCGAGGACGTGGAGCGCACCCCTCGC
CGTGGTGCACGAGGTATACTATATGCTTACGTCCGGCCGT 600
CCCCGCACGCTTTGGGAACCTCGGGAGGTAG

MVERVVRTLLDGRFLLEEGVGLWEWRYPFPLEGEAVVLD 40
LETTGLAGLDEVIEVGLLRLEGGRRLPFQSLVRPLPPAEA
RSWNLTGIPREALLEEAPSLEEVLEKAYPLRGDATALVIHNA 120
AFDLGFLRPALEGLGYRLNPVDSLRLARRGLPGLRRYG
LDALSEVLELPRRTCHRALEDVERTLAVVHEVYYMLTSGR 200
PRTLWELGRZ

FIG.18B

Alignment of dnaA genes.

P.mar.	MLEASWEK	VQSSL--KQNLK--	-----PSYE	TWIRTEFSG--FKN	GELTLIAPNSFSSAW	LKNYSQTIQETAE-	65
Syn.sp.	MVSCENLWQQ	ALAIL--ATQLTK--	-----PAFD	TWIKASVLIS--LGD	GVATIQVENGEVLAH	LQKSYGPLLMEVLT-	67
B.sut.	MENILDLMNQ	ALAQI--EKKLSK--	-----PSFE	TWIKSTKAHS--LQG	DTLTITAPNEFARDW	LESRYLHLJADTY-	67
M.tub.	MTDDPGSGFTTWNA	VWSELNGDPKVDGDP	SSDANLSAPLTPOQR	AMLALVQPLT--IVE	GFALLSVPSFVQNE	IERHLRAPITDALS-	87
T.th.	MSHEAVWQH	VLEHI--RRSITE--	-----VEFH	TWFERIRPLG--IRD	GVLELAVPTSFALDW	IRRHVAGLIQEGPR-	66
E.coli	MSLSLWQQ	CLARL--QDELPA--	-----TEFS	WIRPLOAE--LSD	NTLALYAPNRFVLDW	VRDKYLNININGLLT-	64
T.mar.	MKER	ILQEI--KTRVNR--	-----KSWE	LMFSSFDVKS--IBG	NKVVSFGNLFIKEM	LEKKYYSVLKAVK-	61
H.pyl.	MDTNNNIEKE	ILALVKQNPKVSL--	-----IEYE	NYFSQLKYNPNASKS	DIAFFYAENQVLCCTT	ITAKYGALLKEILSQ	72
P.mar.	EIFG---	EPVTVHVK	VKANAESSDEHYSSA	P-----	ITPPLEASPGSV	DSSGSSILRSK----	130
Syn.sp.	DLTG---	QEITVKLI	TDGLEPHS---	LIGQ	E-----	SSLPMETTP----	115
B.sut.	ELTG---	EELSIFKV	IPQNDVEDFMPKPQ	VKKAVKELTSDFPQN	-----	-----MLNPKYTFDT	119
M.tub.	RRLGH-QIQLGVRIA	PPATDEADDTVPPS	ENPATTSPDYTTDND	EIDDSAAAAGDINQHS	WPSVFTEPHNTDSA	TAGVTSLNRRYTFDT	176
T.th.	LLGAQ-APRFELRV	PGVVQEDIFQPPPS	PPAQAP-----	-----	-----	-----EDTFKT	108
E.coli	SFCGADAPQLRFEVG	TKPVTCTPQAAVTSN	VAAPAQVAQTQPORA	APSTRSGWNVPPAPA	EP-----	-TYRSNVNVKHTFDN	140
T.mar.	VLG---	NDATFEIT	YEAPEPHSSYSEPLV	KKRAVLLTP-----	-----	-----LNPDTTFEN	106
H.pyl.	NKVG-MHLAHSVDVR	IEVAPKIQINAQSN	NYKAIKTS-----	-----	-----	-----VKDSYTFEN	118
P.mar.	FVVGPNSRMAHAAAM	AVAESPGRFENPLFI	CGGVGLGKTHLMQAI	GHYRLIDPGAKVSY	VSTETFTNDLIL--A	IRQDRMQAFRDRYR-	217
Syn.sp.	FVVGPTNRMAHAASL	AVAESPGRFENPLFL	CGGVGLGKTHLMQAI	AHYRLEWYNPAKVY	VSTERFTNDLIT--A	IRODNMEDFRSYR-	202
B.sut.	FVIGSGNRFHAHAASL	AVAEPAPAKAVNPLFI	YGGVGLGKTHLMHAI	GHYVIDHNPSAKVY	LSSEKFTNEFIN--S	IRDNKAVDFNRNYR-	206
M.tub.	FVIGALSNRFHAHAAL	ALAEAPARAVNPLFI	WGESGLGKTHLLHAA	GNVQAQLFPGMRVKY	VSTEEFTNDFIN--S	LRDDRKVAFKRSYR-	263
T.th.	SWMGPTTEWPHGGAV	AVAESPGRAYNPLFI	YGGRGLGKTYLMAHAY	GPLRAKRFPHMRLEY	VSTETFTNELINRPS	AR-DRMTEFRERYR-	196
E.coli	FVEGKSNQLARAAAR	QVADNPGCAVNPLFL	YGGTGLGKTHLLHAV	GNGIMARKPNPAKVY	MHSERFVQDMVK--A	LQNNAJEEFKRYR-	227
T.mar.	FVVGPGNSFAYHAAL	EVAKHPGR-YNPLFI	YGGVGLGKTHLLQSI	GNVYVQNEPDLRVMY	ITSEKFINDLVD--S	MKEGKLANEFREKRYK	193
H.pyl.	FVVGSCNNTVYEIAK	KVAQSDTPPNPVLV	YGGTGLGKTHLLNAI	GNHALEK--HKKVVL	VTSEDFLTDFLK--H	LDNKITMDSFKAKYR-	203

FIG.19A

P.mar. AADLILVDDIQFIEG KEYTQEEFFHTFNAL HDAGSQIVLASDRPP SQIPRLQERLMSRFS MGLIADVQAPDLETR MAILQKKAHERVGL 307
 Syn.sp. SADFLILLDDIQFIKG KEYTQEEFFHTFNAL HEAGQVWVASDRAP QRIFGLQDRLISRFS MGLIADIQVPDLETR MAILQKKAHYDRIRL 292
 B.sut. NVDVLLDDIQFIQFAG KEQTQEEFFHTFNAL HEESKQIVISSDRPP KEIPTLEDRLRSRFE WGLITDITPPDLETR IAILRKKAKAEGLDI 296
 M.tub. DVDVLLVDDIQFIEG KEGIQEEFFHTFNAL HNANKQIVISSDRPP KQATLEDRLRTRFE WGLITDITPPDLETR IAILRKKAKAEGLDI 296
 T.th. SVDVLLVDDVQFIAG KERTQEEFFHTFNAL YEAKQIILSSDRPP KQATLEDRLRTRFE WGLITDITPPDLETR IAILRKKAKAEMERLAV 353
 E.coli SVDALLDDIQFFAN KERSQEEFFHTFNAL LEGNQIILTSDRYP KEINGVEDRLKSRFG WGLITVAIEPPELETR IAILKMNAS-SGPED 285
 T.mar. KVDILLDDVQFLLIG KTGVTQELFHTFNEL HDGKQIVICSAREP QKLSEFQDRLVSRFQ MGLIVAKLEPPDEETR KSIARKMLEIEHGEL 317
 H.pyl. HCDFFLLDDAQFLOQ KPKLEEEFFHTFNEL HANSKQIVLISDRSP KNIAGLEDRLKSRFE WGITAKVMPDLETK LSIVKQKQCLNQITL 283 293

P.mar. PRDLIQFIAGRFTSN IRELEGALTRAIAFA SITGLPMTVDSIAPM LD-----PNGQVEVT PKQVLDKVAEVFKVT PDEMRSASRRR-PVS 392
 Syn.sp. PKEVIEYIASHYTSN IRELEGALIRAIAYT SLSNVAMTVENIAPV LN-----PFVEKVAAA PETIITIVAQHYQLK VEELLSNSRRR-EVS 377
 B.sut. PNEVMLYIANQIDSN IRELEGALIRVAYS SLINKDINADLAEEA LKDII-PSSPKPVIT IKEIQRVVGQOFNIK LEDEFKAKRTK-SVA 384
 M.tub. PDDVLELIASSIERN IRELEGALIRVTAF A SLNKTPIDKALAEIV LRDLI-ADANTMQIS AATIMAATAEYFDTT VEELRGPGKTR-ALA 441
 T.th. PEDALEYIARQVTSN IREWEALMRASPFA SLNGVELTRAVAACA LRHLR-P--RELEAD PLEIIRKAAGPVPRPE TPGGAHGERRKKEVW 372
 E.coli PGEVAFFIAKRLSN VRELEGALNRVIANA NFTGRAITIDFVREA LRDLI-A-LQEKVLT IDNIQKTVAEYKIK VADLLSKRRSR-SVA 404
 T.mar. PEEVNFVAENVDDN LRRLRGAIKILVYK ETTGKEVDLKEAILL LKDFIKPNRVKAMPD IDELIEIVAKVTGVP REEILSNSRNV-KAL 372
 H.pyl. PEEVMEYIAQHISDN IRQMEGAIKISVNA NLNANASIDLNAKTV LEDL--QKDHABGSS LENILLAVAQSLNLK SSEIKVSSRQK-NVA 380

P.mar. QARQVGMVLMRQGTN LSLPRIGDTFGKDH TTMVYAEQVEKLS S-----DPQIA SQVQKIRDLLQIDSR RKR----- 461
 Syn.sp. LARQVGMVLMRQHTD LSLPRIGEAFGGKH TTMVYSCDKITQLQ K-----DWETS QTUTLSLHRINIAGQ APES----- 447
 B.sut. FPRQIAMVLSREMTD SSLPKIGEFGGRDH TTVIHAHEKISKLLA D-----DEQLQ QHVKEIKEQLK----- 446
 M.tub. QSRQIAMVLCRELTD LSLPKIGQAFG-RDH TTMVYAQKILSEMA E-----RREVF DHVKELTTRIRQSK R----- 507
 T.th. LPRQIAMVIVRELTP ASLPEIGQLFGGRDH TTVRYAIQKVQELAG KP-----DREVQ GLIARTLREACTDFVD NLWITCG 446
 E.coli RPRQAMALAKELTN HSLPEIGDAFGGRDH TTVLHACRKIEQLRE E-----SHDIK EDFSNLIRTLSS----- 467
 T.mar. TARRIGMIVAKNYLK SSLRTIAEKN-RSH PVVDSVKVKVDSLL KG-----NKQLK ALIDEVIGEISRRAL SG----- 440
 H.pyl. LARKLVVYFARLYTP NPTLSLAQFLDLKDH SSISKMYSGVKQMLE EEKSPFVLSIREIK NRLNELNDKKTAFNS SE----- 457

FIG.19B

GTGTCGCACGAGGCCGTCTGGCAACACGTTCTGGAGCA⁻CA
 TCCGCCGCAGCATCACCGAGGTGGAGTTCACACCTGGTT
 TGAAAGGATCCGCCCCTTGGGGATCCGGGACGGGGTGCTG 120
 GAGCTCGCCGTGCCACCTCCTTTGCCCTGGACTGGATCC
 GGCGCCACTACGCCGGCCTCATCCAGGAGGGCCCTCGGCT
 CCTCGGGGCCCAGGCGCCCCGGTTTGAGCTCCGGGTGGTG 240
 CCCGGGGTCTGTAGTCCAGGAGGACATCTTCCAGCCCCCGC
 CGAGCCCCCGGCCAAGCTCAACCCGAAGATACCTTTAA
 AACTTCGTGGTGGGGCCCAACAACCTCCATGGCCCCACGGC 360
 GGCGCCGTGGCCGTGGCCGAGTCCCCCGGCCGGGCGCTACA
 ACCCCCTCTTCATCTACGGGGGCGGTGGCCTGGGAAAGAC
 CTACCTGATGCACGCCGTGGGCCCACTCCGTGCGAAGCGC 480
 TTCCCCCACATGAGATTAGAGTACGTTTCCACGGAAACTT
 TCACCAACGAGCTCATCAACCGGCCATCCGCGAGGGACCG
 GATGACGGAGTTCCGGGAGCGGTACCGCTCCGTGGACCTC 600
 CTGCTGGTGGACGACGTCCAGTTCATCGCCGGAAAGGAGC
 GCACCCAGGAGGAGTTTTTCCACACCTTCAACGCCCTTTA
 CGAGGCCCACAAAGCAGATCATCCTCTCCTCCGACCGGCCG 720
 CCCAAGGACATCCTCACCTGGAGGCGCGCCTGCGGAGCC
 GCTTTGAGTGGGGCCTGATCACCGACAATCCAGCCCCCGA
 CCTGGAAACCCGGATCGCCATCCTGAAGATGAACGCCAGC 840
 AGCGGGCCTGAGGATCCCGAGGACGCCCTGGAGTACATCG
 CCCGGCAGGTCACCTCCAACATCCGGGAGTGGGAAGGGGC
 CCTCATGCGGGCATCGCCTTTCGCCTCCCTCAACGGCGTT 960
 GAGCTGACCCGCGCCGTGGCGGCCAAGGCTCTCCGACATC
 TTCGCCCCAGGAGCTGGAGGCGGACCCCTTGGAGATCAT
 CCGCAAAGCGGCGGGACCAGTTCGGCCTGAAACCCCGGGA 1080
 GGAGCTCACGGGGAGCGCCGCAAGAAGGAGGTGGTCCCTCC
 CCCGGCAGCTCGCCATGTACCTGGTGCGGGAGCTCACCCC
 GGCTTCCCTGCCCCGAGATCGACCAGCTCAACGACGACCGG 1200
 GACCACACCACGGTCTCTACGCCATCCAGAAGGTCCAGG
 AGCTCGCGGAAAGCGACCGGGAGGTGCAGGGCCTCCTCCG
 CACCCTCCGGGAGGCGTGACATGA

FIG.20A

VSHEAVWQHVLHRRSITEVEFHTWFERIRPLGIRDGVL
ELAVPTSFALDWIRRHAYAGLIQEGPRLPGAQAPRFELRVV
PGVVQEDIFQPPSPPAQAQPEDTFKTSWWGPTTPWPHG 120
GAVAVAESPGRAYNPLFIYGGRGLGKTYLMHAVGPLRAKR
FPHMRLEYVSTETFTNELINRPSARDRMTEFRERYRSVDL
LLVDDVQFIAGKERTQEEFFHTFNALYEAHKQIILSSDRP 240
PKDILTLEARLRSRFEWGLITDNPAPDLETRIAILKMNAS
SGPEDPEDALEYIARQVTSNIREWEGALMRASPFASLNGV
ELTRAVAAKALRHLRPRELEADPLEIIRKAAGPVRPETPG 360
GAHGERRKKEVVLPRQLAMYLVLRELTPASLPEIDQLNDDR
DHTTVLYAIOKVQELAESDREVQGLLRTLREACT

FIG.20B

ATGAACATAACGGTTCCCAAAAACTCCTCTCGGACCAGC 40
 TTTCCCTCCTGGAGCGCATCGTCCCCTCTAGAAGCGCCAA
 CCCCCTCTACACCTACCTGGGGCTTTACGCCGAGGAAGGG 120
 GCCTTGATCCTCTTCGGGACCAACGGGGAGGTGGACCTCG
 AGGTCCGCCTCCCCGCCGAGGCCCAAGCCTTCCCCGGGT 200
 GCTCGTCCCCGCCAGCCCTTCTTCCAGCTGGTGCGGAGC
 CTTCTGGGGACCTCGTGGCCCTCGGCCTCGCCTCGGAGC 280
 CGGGCCAGGGGGGGCAGCTGGAGCTCTCCTCCGGGCGTTT
 CCGCACCCGGCTCAGCCTGGCCCTGCCGAGGGCTACCCC 360
 GAGCTTCTGGTGCCCGAGGGGGAGGACAAGGGGGCCTTCC
 CCCTCCGGACGCGGATGCCCTCCGGGGAGCTCGTCAAGGC 440
 CTTGACCCACGTGCGCTACGCCGCGAGCAACGAGGAGTAC
 CGGGCCATCTTCCGCGGGGTGCAGCTGGAGTTCTCCCCC 520
 AGGGCTTCCGGGCGGTGGCCTCCGACGGGTACCGCCTCGE
 CCTCTACGACCTGCCCCTGCCCCAAGGGTTCCAGGCCAAG 600
 GCCGTGGTCCCCGCCCGAGCGTGGACGAGATGGTGCGGG
 TCCTGAAGGGGGCGGACGGGGCCGAGGCCGTCTCTGCCCT 680
 GGGCGAGGGGGTGTGTTGGCCCTGGCCCTCGAGGGCGGAAGC
 GGGGTCCGGATGGCCCTCCGCCTCATGGAAGGGGAGTTCC 760
 CCGACTACCAGAGGGTCAATCCCCCAGGAGTTCGCCCTCAA
 GGTCCAGGTGGAGGGGGAGGCCCTCAGGGAGGCGGTGCGC 840
 CGGGTGAGCGTCCTCTCCGACCGGCAGAACCACCGGGTGG
 ACCTCCTTTTGGAGGAAGGCCGGATCCTCCTCTCCGCCGA 920
 GGGGGACTACGGCAAGGGGCAGGAGGAGGTGCCCCGCCAG
 GTGGAGGGGCGGACATGGCCGTGGCCTACAACGCCCGCT 1000
 ACCTCCTCGAGGCCCTCGCCCCGTGGGGGACCGGGCCCA
 CCTGGGCATCTCCGGGCCACGAGCCCGAGCCTCATCTGG 1080
 GGGGACGGGGAGGGGTACCGGGCGGTGGTGGTGCCCCCTCA
 GGGTCTAG 1128

FIG.21A

MNITVPPKLLSDQLSLLERIVPSRSANPLYTYLGLYAEEG 40
ALILFGTNGEVDLEVRLPAEAQSLPRVLVPAQPFFQLVRS
LPGDLVALGLASEPGQGGQLELSSGRFRTRLAPAEGLYP 120
- ELLVPEGEDKGAFLRTRMPSELVKALTHVRYAASNEEY
RAIFRGVQLEFSPQGFRAVASDGYRLALYDLPLPQGFQAK 200
AVVPARSVDEMVRVLKGADGAEAVLALGEGVLALALEGGS
GVRMALRLMEGEFPDYQRVIPQEFALKVQVEGEALREAVR 280
RVSVLSDRQNHVRVDLLLEEGRILLSAEGDYGKGQEEVPAQ
VEGPDMAVAYNARYLLEALAPVGDRAHLGISGPTSPSLIW 360
GDGEGYRAVVVPLRVZ

FIG.21B

T.th.beta	MNITVPKKLLSDQLSLLERIVPSRSANPLYTYLGLYAEAGALILFGTNGEVDLEVRLP AE
E.coli.bet	MKFTVEREHLKPLQQVSGPLGGRPTLPILGNLLQVADGTLSLAGTDLEMEMVARVALV
P.mirab.be	MKFTIEREQLLKPLQQVSGPLGGRPTLPILGNLLKVTENTLSLGTDLMEMMARVSLS
H.infl.bet	MQFSISRENILKPLQQVCGVLSNRPNIPVANNVLLQIEDYRLATITGTDLEVELSSQTQLS
P.put.beta	MHFTIQREALKPLQVAGVVERQTLPVLSNVLLVWQQQLSLGTGTDLEVELVGRVQLE
B.cap.beta	MKFTIQNDILTRNLKKTIVLVKNISFPILFNILIQVEDGTLSTYTNLEIELISKIEII
	* . . . * . . . * . . . * . . . *
T.th.beta	AQSLP-KVLVPAQFFQJVRSLPGDLVALGLASEPQGGQQLSSGRFTRLSLAPAGY
E.coli.bet	QPHEPGATTVPARKFFDICRGLP-EGAEIAVQLE----GERMLVRSGRSRFSLSTLPAADF
P.mirab.be	QSHEIGATTVPARKFFDIWRGLP-EGAEISVELD----GDRLVRSGRSRFSLSTLPASDF
H.infl.bet	SSSENGFTTIPAKKFLDICRGLS-DDSEITVTFE---QDRALVQSGRSRFTLATQPAEY
P.put.beta	EPAPGEITVPARKLMDICKSLP-NDALIDIKVD---EQKLLVKAGRSRFTLSTLPANDF
B.cap.beta	TKYIPGKTTISGRKIILNICRTLS-EKSKIKMQLK---NKKMYISSSENSYILSTLSADTF
	* . . . * . . . * . . . *
T.th.beta	PELLVPEGEDKGAPPLTRMPSGELVKALTHVRYAASNEEYRAIFRGVQLEFSPOGFRAV
E.coli.bet	PNLDD--WQSEVEFTLPQAT----MKRLIEATQFSMAHQDVRYYLNGMLFETEGEELRTV
P.mirab.be	PNLDD--WQSEVEFTLPQAT----LKRLIESTQFSMAHQDVRYYLNGMLFETENTEELRTV
H.infl.bet	PNLTD--WQSEVDFELPQNT----LRRLIEATQFSMANQDARYFLNGMKFETEGNLLRTV
P.put.beta	PTVEE--GPGSLTCNLEQSK----LRRLIERTSFAMAQQDVRYYLNGMLLEVSRNTLRVAV
B.cap.beta	PNHQN--FDYISKFDISSNI-----LKEMIEKTEFSMGKQDVRYYLNGMLLEKKOKFLRSV
	* . . . * . . . * . . . *
T.th.beta	ASDGYRLALYDLPLPQGFQA--KAVVPARSVDENVRLKGADGAEAVLALGEGVLALALE
E.coli.bet	ATDGHRLAVCMPIGQSLPS-HSVIVPRKGVIELMRMLDG-GDNPLRVQIGSNIRAHVG
P.mirab.be	ATDGHRLAVCAMDIGQSLPG-HSVIVPRKGVIELMRLLDGSGESLLQLQIGSNIRAHVG
H.infl.bet	ATDGHRLAVCTISLEQELQN-HSVILPRKGVLELVRLLLET-NDEPARLQIGTNNLRVHLK
P.put.beta	STDGHRALACMSAPIEQEDRHQVIVPRKGILELARLLTD-PEGMVSIVLGQHHIRATTG
B.cap.beta	ATDGYRLAISYTLKKDINF-FSIIIPNKAVMELLKLLNT-QPQLNILLIGSNSIRIYTK
	..** *** . . . * . . . *

FIG.22A

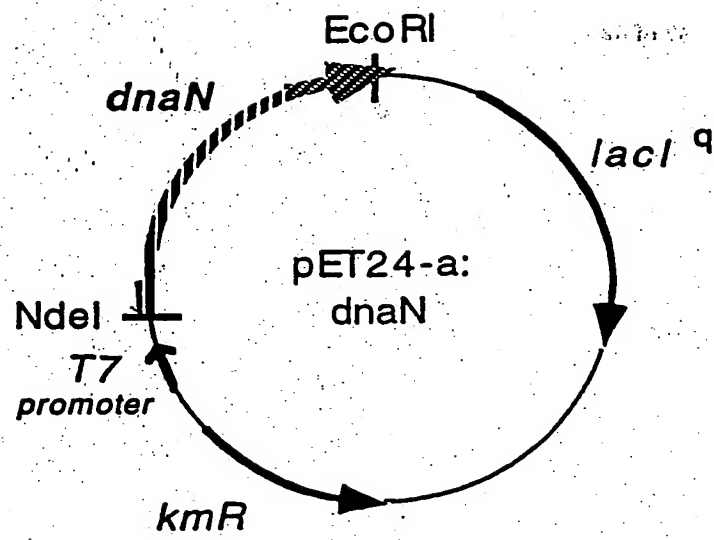
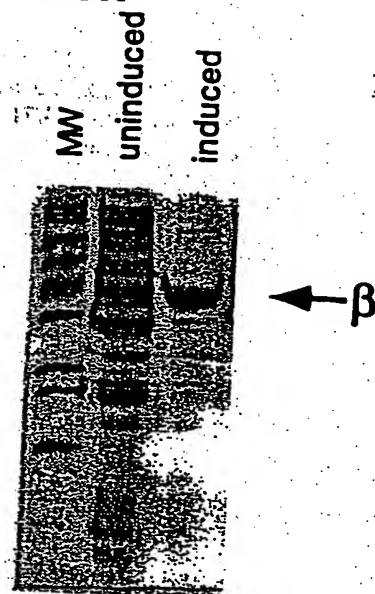


FIG.23

FIG.24A Induction



Lysis

Heat Step

FIG.24B MonoQ Column

Fraction: 5 7 9 11 13 15 17 19 21 23 25

β →

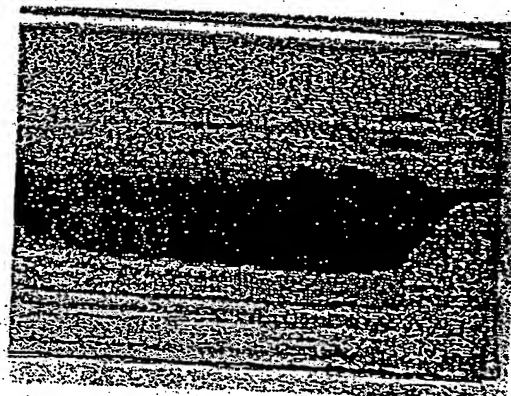


FIG.25A

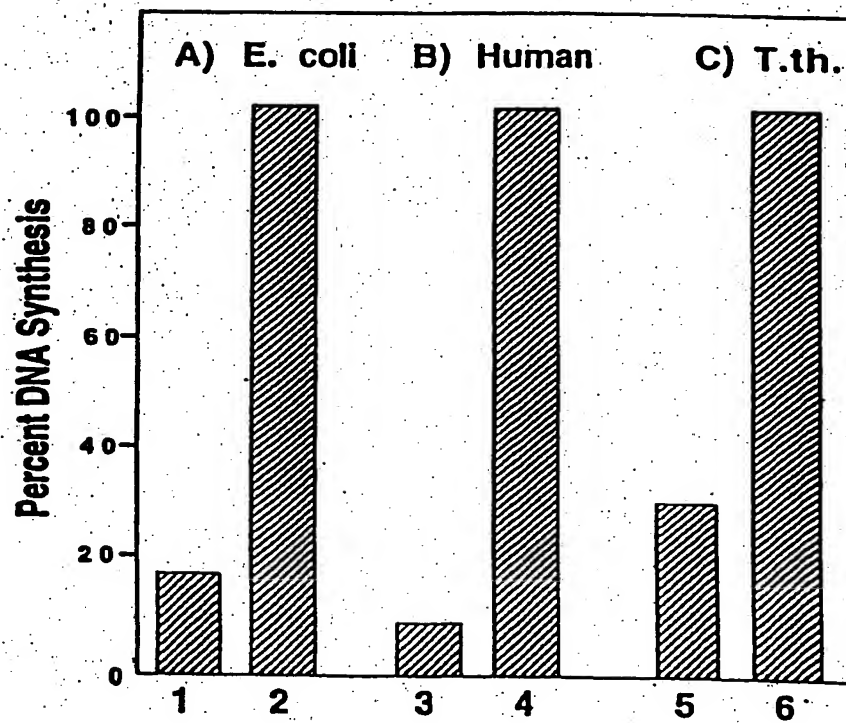
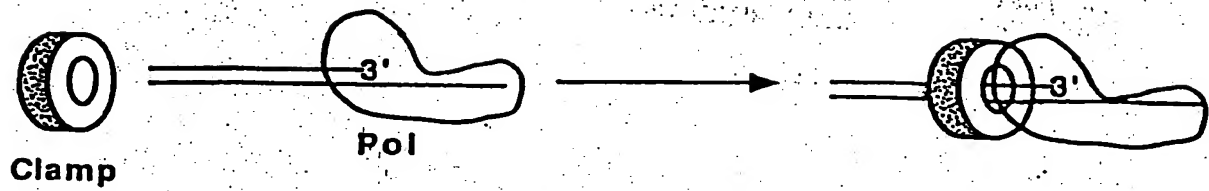


FIG.25B

FIG.26A

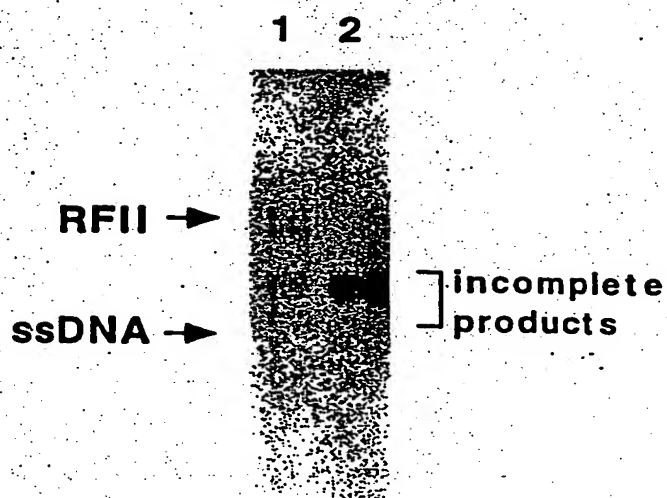
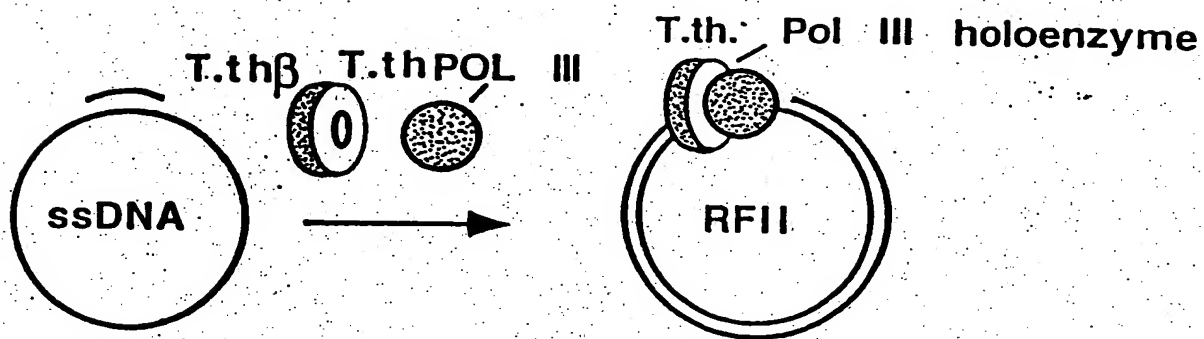


FIG.26B



FIG. 27

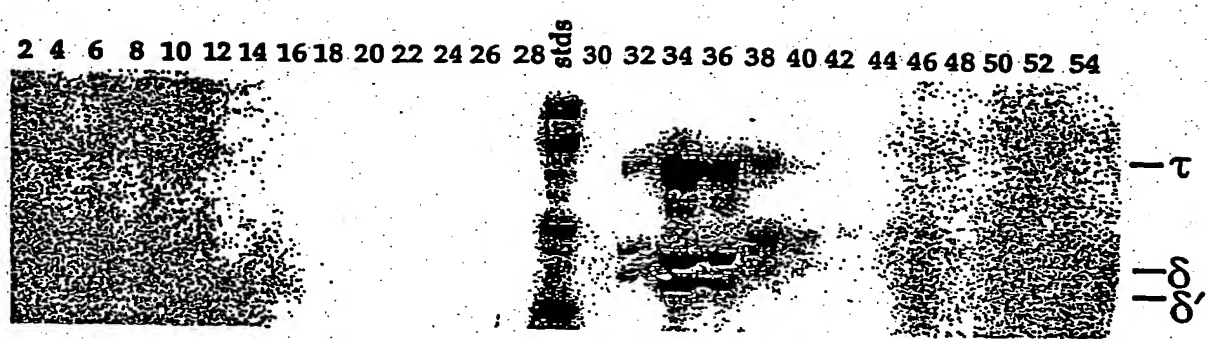


FIG. 28

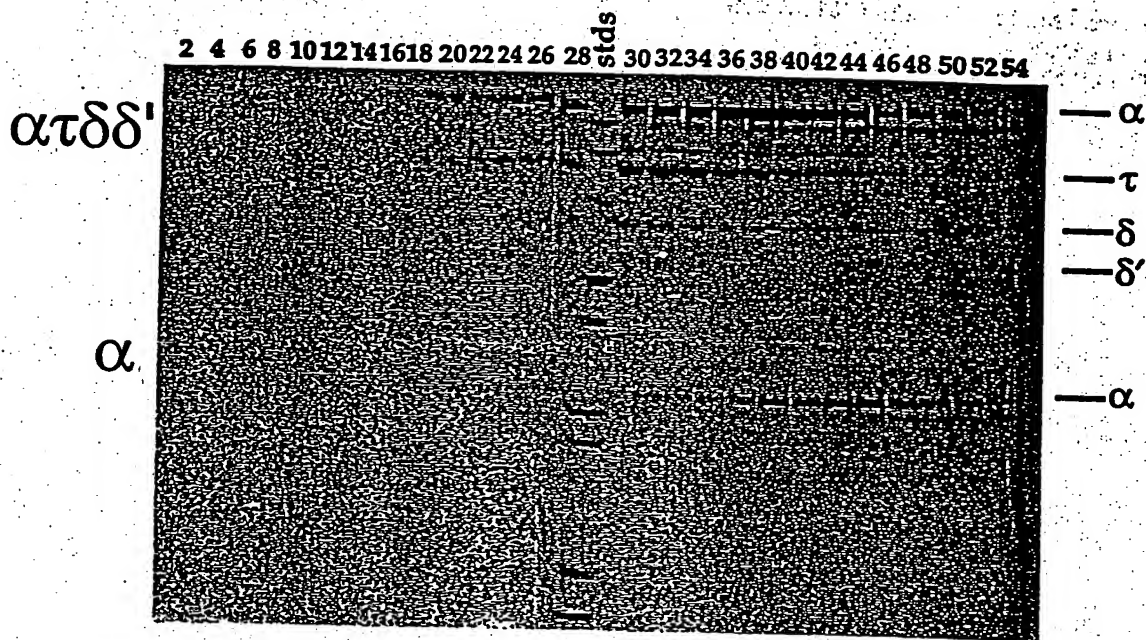


FIG. 29

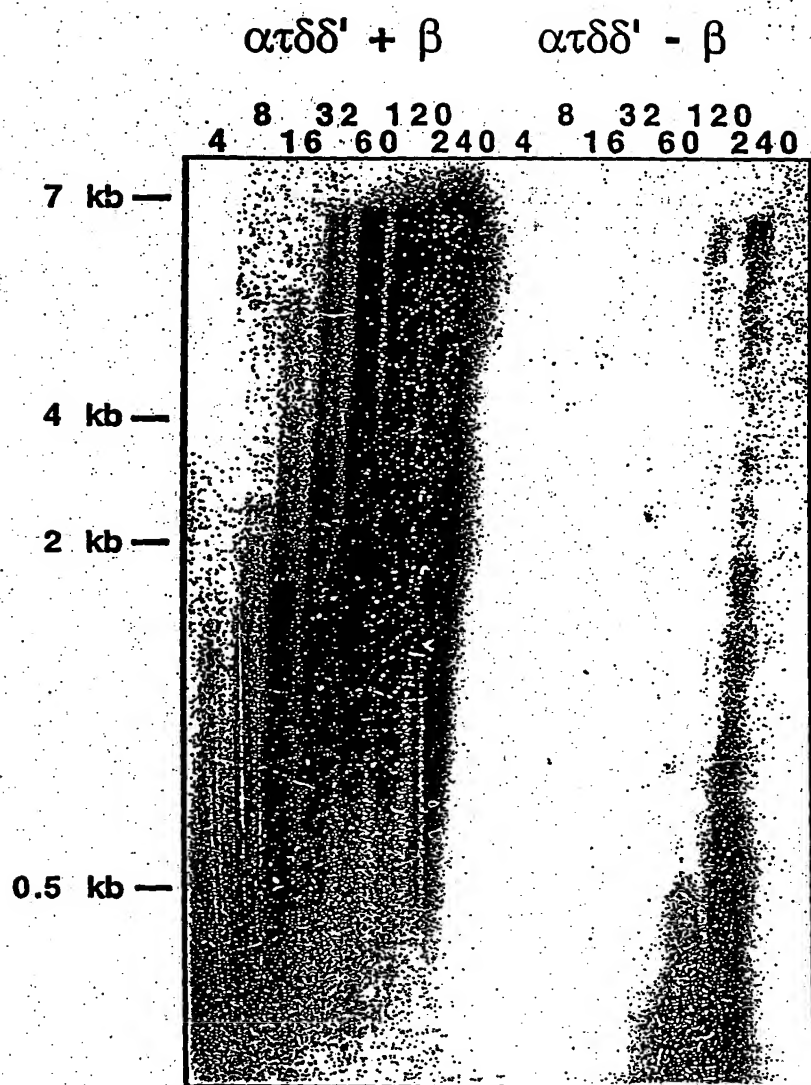


FIG. 30

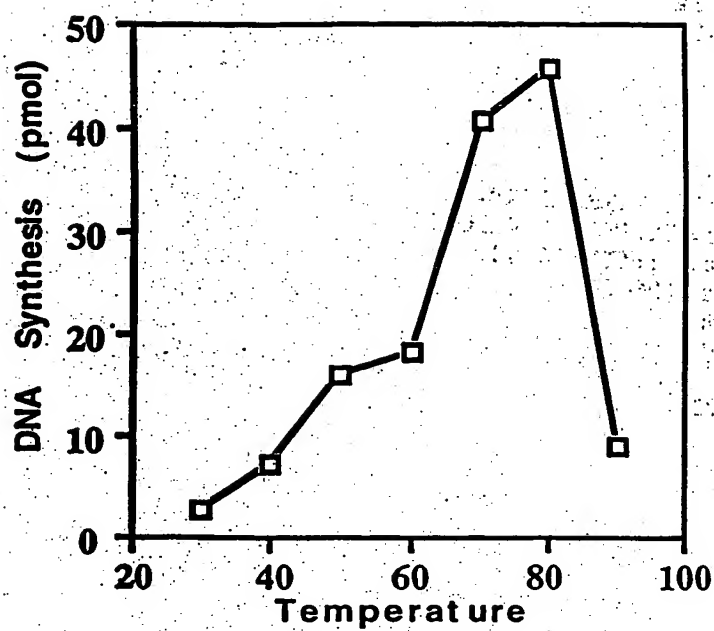


FIG. 31

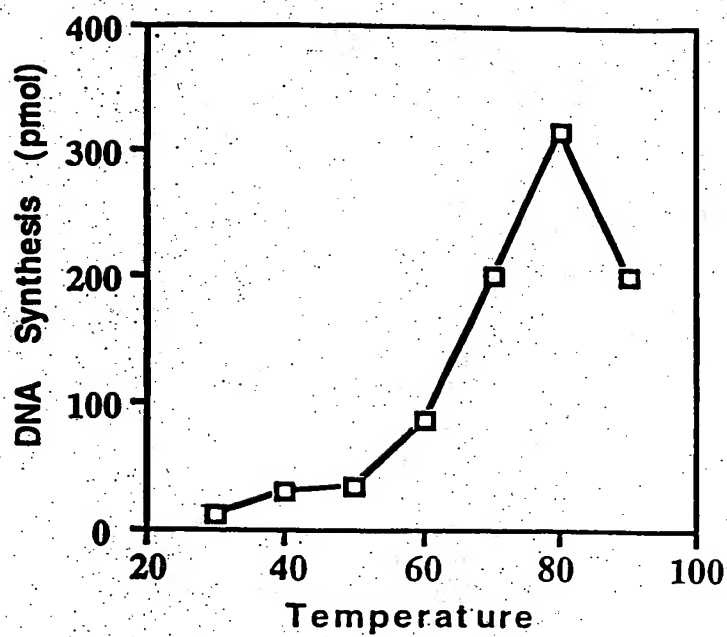


FIG. 32

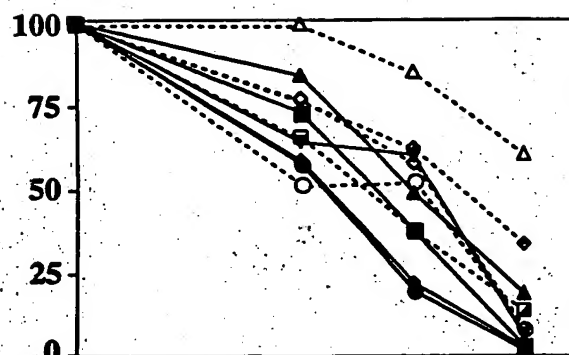
α 

FIG. 33A

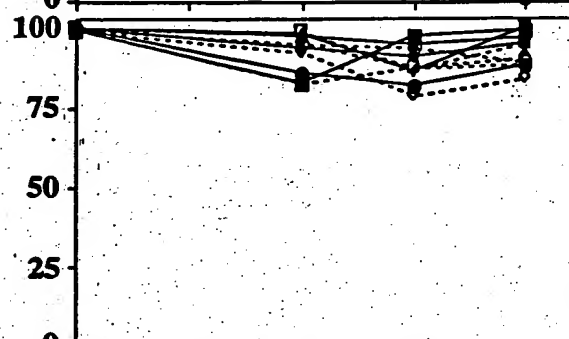
 β 

FIG. 33B

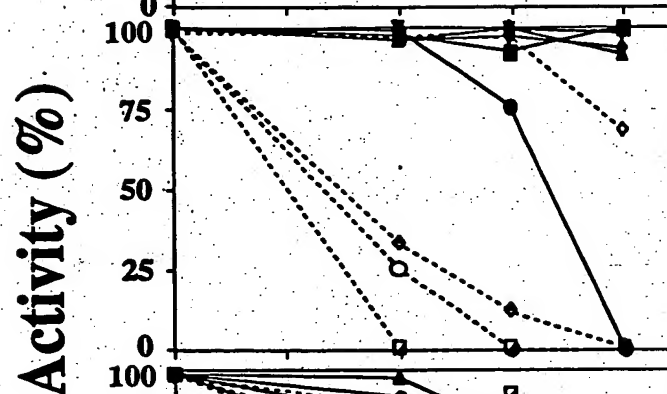
 $\tau\delta\delta'$ 

FIG. 33C

SSB

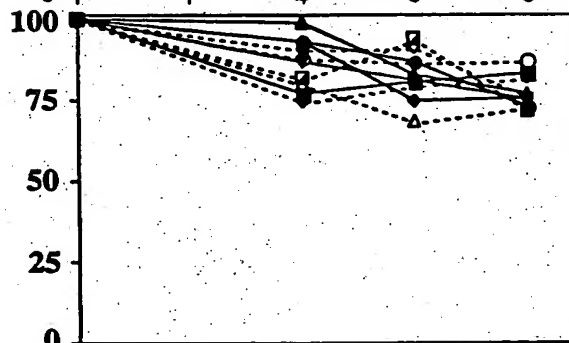


FIG. 33D

Pol III*

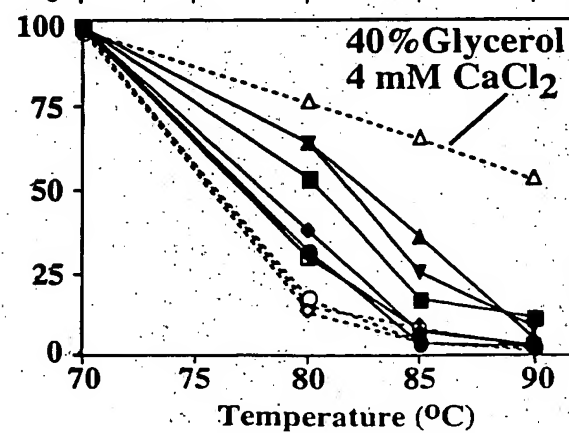


FIG. 33E

ATGAGTAAGGATTTTCGTCCACCTTCACCTGCACACCCAGTTCTCACTCCT	
GGACGGGGCTATAAAGATAGACGAGCTCGTGAAAAAGGCAAAGGAGTATG	100
GATACAAAGCTGTCGGAATGTCAGACCACGGAAACCTCTTCGGTTTCGTAT	
AAATTCTACAAAGCCCTGAAGGCGGAAGGAATTAAGCCCATATTCGGCAT	200
GGAAGCCTACTTTACCACGGGTTTCGAGGTTTGACAGAAAGACTAAAACGA	
GCGAGGACAACATAACCGACAAGTACAACCACCACCTCATACTTATAGCA	300
AAGGACGAAAAGGTCTAAAGAACTTAATGAAGCTCTCAACCTTCGCCTAC	
AAAGAAGGTTTTTACTACAAACCCAGAATTGATTACGAACTCCTTGAAAA	400
GTACGGGGAGGGCCTAATAGCCCTTACCGCATGCCTGAAAGGTGTTCCCA	
CCTACTACGCTTCTATAAACGAAGTAAAAAGGCGGAGGAATGGGTAAAG	500
AAGTTCAGGATATATTCGGAGATGACCTTTATTTAGAACTTCAAGCGAA	
CAACATTCCAGAACAGGAAGTGGCAAACAGGAACTTAATAGAGATAGCCA	600
AAAAGTACGATGTGAAACTCATAGCGACGCAGGACGCCACTACCTCAAT	
CCCGAAGACAGGTACGCCACACGGTTCCTTATGGCACTTCAAATGAAAAA	700
GACCATTACGAACTGAGTTCGGGAAACTTCAAGTGTTCAAACGAAGACC	
TTCACTTTGCTCCACCCGAGTACATGTGGAAAAAGTTTGAAGGTAAGTTC	800
GAAGGCTGGGAAAAGGCACCTCCTGAACACTCTCGAGGTAATGGAAAAGAC	
AGCGGACAGCTTTTGAGATATTTGAAAACCTCCACCTACCTCCTTCCCAAGT	900
ACGACGTTCCGCCCGACAAAACCCCTTGAGGAATACTCAGAGAACTCGCG	
TACAAAGGTTTAAGACAGAGGATAGAAAGGGGACAAGCTAAGGATACTAA	1000
AGAGTACTGGGAGAGGCTCGAGTACGAACTGGAAGTTATAAACAAAATGG	
GCTTTGCGGGATACTTCTTGATAGTTTCAGGACTTCATAAACTGGGCTAAG	1100
AAAAACGACATACCTGTTGGACCCGGAAGGGGAAGTGCTGGAGGTTCCCT	
CGTCGCATACGCCATCGGAATAACGGACGTTGACCCTATAAAGCACGGAT	1200
TCCTTTTTTGAGAGGTTCTTAAACCCCGAAAGGGTTTCCATGCCGGATATA	
GACGTGGATTTCTGTGAGGACAACAGGGAAAAGGTCATAGAGTACGTAAG	1300
GAACAAGTACGGACACGACAACGTAGCTCAGATAATCACCTACAACGTAA	
TGAAGGCGAAGCAAACACTGAGAGACGTGCGAAGGGCCATGGGACTCCCC	1400
TACTCCACCGCGGACAAACTCGCAAACCTCATTCTCAGGGGGACGTTCA	
GGGAACGTGGCTCAGTCTGGAAGAGATGTACAAAACGCCTGTGGAGGAAC	1500
TCCTTCAGAAGTACGGAGAACACAGAACGGACATAGAGGACAACGTAAAG	
AAGTTCAGACAGATATGCGAAGAAAGTCCGGAGATAAAACAGCTCGTTGA	1600
GACGGCCCTGAAGCTTGAAGGTCTCACGAGACACACCTCCCTCCACGCCG	
CGGGAGTGGTTATAGCACCAAAGCCCTTGAGCGAGCTCGTTCCCCTCTAC	1700
TACGATAAAGAGGGCGAAGTCGCAACCCAGTACGACATGGTTCAGCTCGA	
AGAACTCGGTCTCCTGAAGATGGACTTCTCGGACTCAAAACCCCTCACAG	1800
AACTGAAACTCATGAAAGAACTCATAAAGGAAAGACACGGAGTGGATATA	
AACTTCCTTGAACCTTCCCCTTGACGACCCGAAAGTTTACAAACTCCTTCA	1900
GGAAGGAAAAACCACGGGAGTGTTCCAGCTCGAAAGCAGGGGAATGAAAG	
AACTCCTGAAGAACTAAAGCCCGACAGCTTTGACGACATCGTTGCGGTC	2000
CTCGCACTCTACAGACCCGGACCTCTAAAGAGCGGACTCGTTGACACATA	
CATTAAGAGAAAGCACGGAAAAGAACCCGTTGAGTACCCCTTCCCGGAGC	2100
TTGAACCCGTCCTTAAGGAAACCTACGGAGTAATCGTTTATCAGGAACAG	
GTGATGAAGATGTCTCAGATACTTTCCGGCTTTACTCCCGGAGAGGCGGA	2200
TACCTCAGAAAGGCGATAGGTAAGAAGAAAGCGGATTTAATGGCTCAGA	
TGAAAGACAAGTTCATACAGGGAGCGGTGGAAAGGGGATACCCTGAAGAA	2300
AAGATAAGGAAGCTCTGGGAAGACATAGAGAAGTTCGCTTCCTACTCCTT	
CAACAAGTCTCACTCGGTAGCTTACGGGTACATCTCCTACTGGACCGCCT	2400

FIG. 34A

ACGTTAAAGCCCACTATCCCGCGGAGTTCTTCGCGGTAAAACCTCACAACT
 GAAAAGAACGACAACAAGTTCCTCAACCTCATAAAAGACGCTAAACTCTT 2500
 CGGATTTGAGATACTTCCCCCGACATAAAACAAGAGTGATGTAGGATTTA
 CGATAGAAGGTGAAAACAGGATAAGGTTTCGGGCTTGCGAGGATAAAGGGA 2600
 GTGGGAGAGGAAACTGCTAAGATAATCGTTGAAGCTAGAAAGAAGTATAA
 GCAGTTCAAAGGGCTTGCGGACTTCATAAACAAAACCAAGAACAGGAAGA 2700
 TAAACAAGAAAGTCGTGGAAGCACTCGTAAAGGCAGGGGCTTTTGACTTT
 ACTAAGAAAAAGAGGAAAGAACTACTCGCTAAAGTGGCAAACTCTGAAAA 2800
 AGCATTAAATGGCTACACAAAACCTCCCTTTTCGGTGCACCGAAAGAAGAAG
 TGAAGAAGCTCGACCCCTTAAAGCTTGAAAAGGAAGTTCTCGGTTTTTAC 2900
 ATTTCAAGGCACCCCTTGACAACCTACGAAAAGCTCCTCAAGAACCGCTA
 CACACCCATTGAAGATTTAGAAGAGTGGGACAAGGAAAGCGAAGCGGTGC 3000
 TTACAGGAGTTATCACGGAACCTCAAAGTAAAAAGACGAAAAACGGAGAT
 TACATGGCGGTCTTCAACCTCGTTGACAAGACGGGACTAATAGAGTGTGT 3100
 CGTCTTCCCGGGAGTTTACGAAGAGGCAAAGGAACTGATAGAAGAGGACA
 GAGTAGTGGTAGTCAAAGGTTTTCTGGACGAGGACCTTGAAACGGAAAAT 3200
 GTCAAGTTCGTGGTGAAAGAGGTTTTCTCCCTGAGGAGTTTCGCAAAGGA
 GATGAGGAATACCCTTTATATATTCTTAAAAAGAGAGCAAGCCCTAAACG 3300
 GCGTTGCCGAAAACTAAAGGGAATTATTGAAAACAACAGGACGGAGGAC
 GGATACAACTTGGTTCTCACGGTTGATCTGGGAGACTACTTCGTTGATTT 3400
 AGCACTCCCACAAGATATGAACTAAAGGCTGACAGAAAGGTTGTAGAGG
 AGATAGAAAACTGGGAGTGAAGGTCATAATTTAGTAAATAACCCTTACT 3500
 TCCGAGTAGTCCCC

FIG. 34B

MSKDFVHLHLHTQFSLDGAIKIDELVKKAKEYGYKAVGMSDHGNLFGSY	
KFYKALKAEGIKPIIGMEAYFTTGSFRDRKTKTSEDNITDKYNHHLILIA	100
KDDKGLKNLMKLSTLAYKEGFYKPRIDYELLEKYGEGLIALTACLKGV	
TYYASINEVKKAEWVKFKDIFGDDLYLELQANNIPEQEVANRNLI	200
KKYDVKLIATQDAHYLNPEDRYAHTVLMALQMKKTIHELSSGNFKCSNED	
LHFAPPEYMWKKFEGKFEGWEKALLNTLEVMEKTADSFEIFENSTYLLPK	300
YDVPPDKTLEEYLRELAYKGLRQRIERGQAKDTKEYWERLEYELEVINKM	
GFAGYFLIVQDFINWAKKNDIPVGPGRGSAGGSLVAYAIGITDVPDIKHG	400
FLFERFLNPERVSMPDIDVDFCQDNREKVIEWVRNKYGHDNVAQIITYNV	
MKAKQTLRDVARAMGLPYSTADKLAKLIPOGDVQGTWLSLEEMYKTPVEE	500
LLQKYGEHRDIEDNVKKFRQICEESPEIKQLVETALKLEGLTRHTSLHA	
AGVVIAPKPLSELVPLYDDKEGEVATQYDMVQLEELGLLKMDFLGLKTLT	600
ELKLMKELIKERHGV DINFLELPLDDPKVYKLLQEGKTTGVFQLESRGMK	
ELLKKLKPDSFDDIVAVLALYRPGPLKSGLVDTYIKRKHGKEPVEYPFPE	700
LEPVLKETYGIVIVYQEQVMKMSQILSGFTPGEADTLRKAIGKKKADLMAQ	
MKDKFIOGAVERGYPEEKIRKLWEDIEKFASYSFNKSHSVAYGYISYWTA	800
YVKAHYPAEFFAVKLTTEKNDNKFLNLIKDAKLFGEILPPDINKSDVGF	
TIEGENRIRFGLARIKGVGEETAKIIVEARKKYKQFKGLADFINKTKNRK	900
INKKVVEALVKAGAFDFTKKKRKELLAKVANSEKALMATQNSLFGAPKEE	
VEELDPLKLEKEVLGFYISGHPLDNYEKLLKNRYTPIEDLEEWDKESEAV	1000
LTGVITELKVKKTKNGDYMAVFNLDVDTGLIECVVFPGVYEEAKELIEED	
RVVVVKGLDEDLETENVKFVVKEVFSPEEFAKEMRNTLYIFLKREQALN	1100
GVAEKLKGI IENNRTEGDYNLVLTVDLGDYFVDLALPQDMKLKADRKVVE	
EIEKLGVKVII	1161

FIG. 35

ATGAACTACGTTCCCTTCGCGAGAAAAGTACAGACCGAAATTCTTCAGGGA	
AGTAATAGGACAGGAAGCTCCCGTAAGGATACTCAAAAACGCTATAAAAA	100
ACGACAGAGTGGCTCACGCCTACCTCTTTGCCGGACCGAGGGGGGTGGG	
AAGACGACTATTGCAAGAATTCTCGCAAAAGCTTTGAACTGTAAAAATCC	200
CTCCAAAGGTGAGCCCTGCGGTGAGTGCGAAAACTGCAGGGAGATAGACA	
GGGTGTGTTCCCTGACTTAATTGAAATGGATGCCGCCTCAAACAGGGGT	300
ATAGACGACGTAAGGGCATTAAAAGAAGCGGTCAATTACAAACCTATAAA	
AGGAAAGTACAAGGTTTACATAATAGACGAAGCTCACATGCTCACGAAAG	400
AAGCTTTCAACGCTCTCTTAAAAACCTCGAAGAGCCCCCTCCCAGAACT	
GTTTTCGTCCTTTGTACCACGGAGTACGACAAAATTCTTCCCACGATACT	500
CTCAAGGTGTCAGAGGATAATCTTCTCAAAGGTAAGAAAGGAAAAAGTAA	
TAGAGTATCTAAAAAGATATGTGAAAAGGAAGGGATTGAGTGCGAAGAG	600
GGAGCCCTTGAGGTTCTGGCTCATGCCTCTGAAGGGTGCATGAGGGATGC	
AGCCTCTCTCCTGGACCAGGCGAGCGTTTACGGGGAAGGCAGGGTAACAA	700
AAGAAGTAGTGGAGAACTTCTCGGAATTCTCAGTCAGGAAAGCGTTAGG	
AGTTTTCTGAAATTGCTTCTGAACTCAGAAGTGGACGAAGCTATAAAGTT	800
CCTCAGAGAACTCTCAGAAAAGGGCTACAACCTGACCAAGTTTTTGGGAGA	
TGTTAGAAGAGGAAGTGAGAAACGCAATTTTAGTAAAGAGCCTGAAAAAT	900
CCCGAAAGCGTGGTTTCAAGAACTGGCAGGATTACGAAGACTTCAAAGACTA	
CCCTCTGGAAGCCCTCCTCTACGTTGAGAACCTGATAAACAGGGGTAAAG	1000
TTGAAGCGAGAACGAGAGAACCCTTAAGAGCCTTTGAACTCGCGGTAATA	
AAGAGCCTTATAGTCAAAGACATAATTCCCGTATCCCAGCTCGGAAGTGT	1100
GGTAAAGGAAACCAAAAAGGAAGAAAAGAAAGTTGAAGTAAAAGAAGAGC	
CAAAAGTAAAAGAAGAAAAACCAAGGAGCAGGAAGAGGACAGGTTCCAG	1200
AAAGTTTTTAAACGCTGTGGACGGCAAAATCCTTAAAAGAATACTTGAAGG	
GGCAAAAAGGGAAGAAAGAGACGGAAAAATCGTCTTAAAGATAGAAGCCT	1300
CTTATCTGAGAACCATGAAAAAGGAATTTGACTCACTAAAGGAGACTTTT	
CCTTTTTTAGAGTTTGAACCCGTGGAGGATAAAAAAAACCTCAGAAGTC	1400
CAGCGGGACGAGGCTGTTTTAAAGGTAAAGGAGCTCTTCAATGCAAAAAT	
ACTCAAAGTACGAAGTAAAAGCTAAGGTCATAAAGGTGAGAATGCCCGTG	1500
GAAGAGATAGGGCTGTTTAAACGCACTAATAGACGGCTTGCCCAGGTACGC	
ACTCACGAGGACGAAGGAAAAGGGAAAGGGAGAAGTTTTTCGTTTTAGCGA	1600
CTCCTTATAAAGTCAAGGAATTGATGGAAGCTATGGAGGGTATGAAAAAA	
CACATAAAGGATTTAGAAATCCTCGGAGAGACGGATGAGGATTTAACTTT	1700
TTAAAGTATGGGTGTATCTGAGCAAAGGTTTAAAGCTAAAAACAAACCTGA	
AACCCGCAGGGGACCAGCCGAAAGCCATAAAAAAACTCCTTGAAAACCTA	1800
AGGAAAGGCGTAAAAGAACAAACACTTCTCGGAGTCACGGGAAGCGGAAA	
GACTTTTACTCTAGCAAACGTAATAGCGAAGTACAACAAACCAACTCTTG	1900
TGGTAGTTTACAACAAAATTCTCGCGGCACAGCTATACAGGGAGTTTAAA	
GAACTATTCCCTGAAAACGCTGTAGAGTACTTTGTCTCTTACTACGACTA	2000
TTACCAACCTGAAGCCTACATTCCCGAAAAAGATTTATACATAGAAAAGG	
ACGCGAGTATAAACGAAAGCTGGAACGTTTCAGACACTCCGCCACGATAT	2100
CCGTTCTAGAAAGGAGGGACGTTATAGTAGTTGCTTCAGTTTCTTGCCATA	
TACGGACTCGGGAAACCTGAGCACTACGAAAACCTGAGGATAAAACTCCA	2200
AAGGGGAATAAGACTGAACTTGAGTAAGCTCCTGAGGAAACTCGTTGAGC	
TAGGATATCAGAGAAATGACTTTGCCATAAAGAGGGCTACCTTCTCGGTT	2300
AGGGGAGACGTGGTTGAGATAGTCCCTTCTCACACGGAAGATTACCTCGT	
GAGGGTAGAGTTCTGGGACGACGAAGTTGAAAGAATAGTCCTCATGGACG	2400
CTCTGAAC	

FIG. 36

MNYVPFARKYRPKFFREVIGQEAPVRILKNAIKNDRVAHAYLFAGPRGVG	
KTTIARILAKALNCKNPSKGEPCGECENCREIDRGVFPDLIEMDAASNRG	100
IDDVRLKEAVNYKPIKGKYKVYIIIDEAHMLTKEAFNALLKTLEPPPT	
VFVLCTTEYDKILPTILSRCQRIIFSQRKEKVIEWLKKICEKEGIECEE	200
GALEVLAHASEGCMRDAASLLDQASVYGEGRVTKEVVENFLGILSQESVR	
SFLKLLLNSEVDEAIKFLRELSEKGYNLTKFWEMLEEEVRNAILVKSLKN	300
PESVVQNWQDYEDFKDYPLEALLYVENLINRGKVEARTREPLRAFELAVI	
KSLIVKDIIPVSQLGSVVKETKKEKKVEVKEEPKVKEEKPKQEEDRFQ	400
KVLNAVDGKILKRILEGAKREERDGGKIVLKIEASYLRTMKKEFDSLKETF	
PFLEFEPVEDKKKPKSSGTRLF	473

FIG. 37

ATGCGCGTTAAGGTGGACAGGGAGGAGCTTGAAGAGGTTCTTAAAAAAGC	
AAGAGAAAGCACGGAAAAAAGCCGCACTCCCGATACTCGCGAACTTCT	100
TACTCTCCGCAAAGAGGAAAACTTAATCGTAAGGGCAACGGACTTGGAA	
AACTACCTTGTAAGTCTCCGTAAAGGGGGAGGTTGAAGAGGAAGGAGAGGT	200
TTGCGTCCACTCTCAAAAACTCTACGATATAGTCAAGAACTTAAATTCCG	
CTTACGTTTACCTTCATACGGAAGGTGAAAACTCGTCATAACGGGAGGA	300
AAGAGTACGTACAACTTCCGACAGCTCCCGCGGAGGACTTTCCCGAATT	
TCCAGAAATCGTAGAAGGAGGAGAAACACTTTTCGGGAAACCTTCTCGTTA	400
ACGGAATAGAAAAGGTAGAGTACGCCATAGCGAAGGAAGAAGCGAACATA	
GCCCTTCAGGGAATGTATCTGAGAGGATACGAGGACAGAATTCACTTTGT	500
GTTCGGAGGGTACAGGCTTGCACTTTATGAACCTCTACGTAAACATTGA	
AAAGAGTGAAGACGAGTCTTTTGCTTACTTCTCCACTCCCGAGTGGAAAC	600
TCGCCGTTAGCTCCTGGAAGGAGAATTCCCGGACTACATGAGTGTCATCC	
CTGAGGAGTTTTTCGGCGGAAGTCTTGTTTGAGACAGAGGAAGTCTTAAAG	700
GTTTTAAAGAGGTTGAAGGCTTTAAGCGAAGGAAAAGTTTTTCCCGTGAA	
GATTACCTTAAGCGAAAACCTTGCCATCTTTGAGTTCGCGGATCCGGAGT	800
TCGGAGAAGCGAGAGAGGAAATTGAAGTGGAGTACACGGGAGAGCCCTTT	
GAGATAGGATTCAACGGAAATACCTTATGGAGGCGCTTGACGCCTACGAC	900
AGCGAAAGAGTGTGGTTCAAGTTCACAACCCCCGACACGGCCACTTTATT	
GGAGGCTGAAGATTACGAAAAGGAACCTTACAAGTGCATAATAATGCCGA	1000
TGAGGGTGTAGCCATGAAAAAGCTTTAATCTTTTTATTGAGCTTGAGCC	
TTTTAATTCTGCGTTTAGCGAAGCCAAACCCAAGTCTTC	1090

FIG. 38

MRVKVDREELEEVLLKARESTEKKAALPILANFLLSAKEENLIVRATDLE	
NYLVVSVKGEVEEEGEVCVHSQKLYDIVKNLNSAYVYLHTEGEKLVITGG	100
KSTYKLPTAPAEDFPEFPEIVEGGETLSGNLLVNGIEKVEYAIKEEANI	
ALQGMYLRGYEDRIHFVGS DGHRLALYEPLGEFSKELLI PRKSLKVLKKL	200
ITGIEDVNIKSEDES FAYFSTPEWKLA VRLLEGEFPDYMSVIPEEFSAE	
VL FETEEVLKVLKRLKALSEGKVFPVKITLSENLAIFE FADPEFGEAREE	300
IEVEYTGEPFEIGFNGKYLMEALDAYDSERVWFKFTTPDTATLLEAEDYE	
KEPYKCIIMPMRV	363

FIG. 39

GTGGAAACCACAATATTCCAGTTCCAGAAAACCTTTTTTCACAAAACCTCC	
GAAGGAGAGGGTCTTCGTCCCTTCATGGAGAAGAGCAGTATCTCATAAGAA	100
CCTTTTTGTCTAAGCTGAAGGAAAAGTACGGGGAGAATTACACGGTTCTG	
TGGGGGGATGAGATAAGCGAGGAGGAATTCTACACTGCCCTTTCCGAGAC	200
CAGTATATTTCGGCGGTTCAAAGGAAAAAGCGGTGGTCATTTACAACCTTCG	
GGGATTTCTCTGAAGAAGCTCGGAAGGAAGAAAAAGGAAAAAGAAAGGCTT	300
ATAAAAGTCCTCAGAAACGTAAAGAGTAACTACGTATTTATAGTGACGA	
TGCGAAACTCCAGAAACAGGAACTTTCTTCGGAACCTCTGAAATCCGTAG	400
CGTCTTTTCGGCGGTATAGTGGTAGCAAACAGGCTGAGCAAGGAGAGGATA	
AAACAGCTCGTCCTTAAGAAGTTCAAAGAAAAAGGGATAAACGTAGAAAA	500
CGATGCCCTTGAATACCTTCTCCAGCTCACGGGTACAACTTGATGGAGC	
TCAAACCTTGAGGTTGAAAAACTGATAGATTACGCAAGTGAAAAGAAAATT	600
TTAACTACTCGATGAGGTAAAGAGAGTAGCCTTCTCAGTCTCAGAAAACGT	
AAACGTATTTGAGTTCGTTGATTTACTCCTCTTAAAGATTACGAAAAGG	700
CTCTTAAAGTTTTGGACTCCCTCATTTCCTTCGGAATACACCCCTCCAG	
ATTATGAAAATCCTGTCCTCCTATGCTCTAAACCTTTACACCCTCAAGAG	800
GCTTGAAGAGAAGGGAGAGGACCTGAATAAGGCGATGGAAAGCGTGGGAA	
TAAAGAACAACCTTTCTCAAGATGAAGTTCAAATCTTACTTAAAGGCAAAC	900
TCTAAAGAGGACTTGAAGAACCTAATCCTCTCCCTCCAGAGGATAGACGC	
TTTTTCTAAACCTTACTTTTCAAGACACAGTGCAGTTGCTGGGGATTTCTT	1000
GACCTCAAGACTGGAGAGGGAAGTTGTGAAAAATACTTCTCATGGTGGAT	
AATCTTTTTTATGAAGTTTGCGGTTTGCGTTTTTCCCGGTTCT	1093

FIG. 40

VETTIQFQKTFFTKPPKERVFLHGEEQYLIRTFLSKLKEKYGENYTVL	
WGDEISEEEFYTALSETSI FGGSKEKAVVIYNFGDFLKKLGRKKKEKERL	100
IKVLRNVKSNYVFIVYDAKLQKQELSSEPLKSVASF GGIVVANRLSKERI	
KQLVLKKFKEKGINVENDALEYLLQLTGYNLMELKLEVEKLIDYASEKKI	200
LTLDEVKRVAFSVSENVNVFEFVDLLLLLDYKALKVLDLSISFGIHPLQ	
IMKILSSYALKLYTLKRLEEKGEDLNKAMESVGIKNNFLKMKFKSYLKAN	300
SKEDLKNLILSLQRIDAFSKLYFQDTVQLLRDFLT SRLEREVVKNTSHGG	

FIG. 41

ATGGAAAAAGTTTTTTTGGAAAACTCCAGAAAACCTTGCACATACCCGG	
AGGACTCCTTTTTTACGGCAAAGAAGGAAGCGGAAAGACGAAAACAGCTT	100
TTGAATTTGCAAAAGGTATTTTATGTAAGGAAAACGTACCTGGGGATGCG	
GAAGTTGTCCCTCCTGCAAACACGTAAACGAGCTGGAGGAAGCCTTCTTT	200
AAAGGAGAAATAGAAGACTTTAAAGTTTATAAGACAAGGACGGTAAAAAG	
CACCTTCGTTTACCTTATGGGCGAACATCCCGACTTTGTGGTAATAATCCC	300
GAGCGGACATTACATAAAGATAGAACAGATAAGGGAAGTTAAGAACTTTG	
CCTATGTGAAGCCCGCACTAAGCAGGAGAAAAGTAATTATAATAGACGAC	400
GCCCACGCGATGACCTCTCAGGCGGCAAACGCTCTTTTAAAGGTATTGGA	
AGAGCCACCTGCGGACACCACCTTTTATCTTGACCACGAACAGGCGTTCTG	500
CAATCCTGCGGACTATCCTCTCCAGAACTTTTCAAGTGGAGTTCAAGGGC	
TTTTCAGTAAAAGAGGTTATGGAAATAGCGAAAGTAGACGAGGAAATAGC	600
GAACTCTCTGGAGGCAGTCTAAAAAGGGCTATCTTACTAAAGGAAAACA	
AAGATATCCTAAACAAAGTAAAGGAATTCTTGGAACGAGCCGTTAAAA	700
GTTTACAAGCTTGCAAGTGAATTCGAAAAGTGGGAACCTGAAAAGCAAAA	
ACTCTTCCTTGAAATTATGGAAGAATTGGTATCTCAAAAATTGACCGAAG	800
AGAAAAAAGACAATTACACCTACCTTCTTGATACGATCAGACTCTTTAAA	
GACGGAATCGCAAGGGGTGTAAACGAACCTCTGTGGCTGTTTACGTTAGC	900
CGTTCAGGCGGATTAATAAACCGTTATTGATTCCGTAACATTTAAACCTT	
AATCTAAATTATGAGAGCCTTTGAAGGAGGTCTGGTATGGAAAATTTGAA	1000
GATTAGATATATAGATACGAGGAAGATAGGAACCGTGAGCGGTGTAAAAG	
T	1051

FIG. 42

MEKVFLEKLQKTLHIPGGLLFYKGESGKTKTAFEFAKGILCKENVPWGC	
GSCPSCKHVNELEEAFFKGEIEDFKVYKDKDGKKHFVYLMGEHPDFVVI	100
PSGHYIKIEQIREVKNFAYVKPALSRRKVIIIDDAHAMTSQAANALLKVL	
EEPPADTTFILTTNRRSAILPTILSRTFQVEFKGFSVKEVMEIAKVDEEI	200
AKLSGGSILKRAILLKENKDILNKVKEFLENEPLKVYKLASEFEKWEPEKQ	
KLFLEIMEELVSQKLTEEKDNYTYLLDTIRLFKDGGLARGVNEPLWLFTL	300
AVQAD	

FIG. 43

ATGAACTTCCTGAAAAAGTTCCTTTTACTGAGAAAAGCTCAAAAGTCTCC
 TTA CTTCGAAGAGTTCTACGAAGAAATCGATTTGAACCAGAAGGTGAAAG 100
 ATGCAAGGTTTGTAGTTTTTTGACTGCGAAGCCACAGAACTCGACGTAAAG
 AAGGCAAAACTCCTTTCAATAGGTGCGGTTGAGGTTAAAAACCTGGAAAT 200
 AGACCTCTCTAAATCTTTTTACGAGATACTCAAAAGTGACGAGATAAAGG
 CGGCGGAGATACATGGAATAACCAGGGAAGACGTTGAAAAGTACGGAAAG 300
 GAACCAAAGGAAGTAATATACGACTTTCTGAAGTACATAAAGGGAAGCGT
 TCTCGTTGGCTACTACGTGAAGTTTGACGTCTCACTCGTTGAGAAGTACT 400
 CCATAAAGTACTTCCAGTATCCAATCATCAACTACAAGTTAGACCTGTTT
 AGTTTCGTGAAGAGAGATACCAGAGTGGCAGGAGTCTTGACGACCTTAT 500
 GAAGGAACTCGGTGTAGAAATAAGGGCAAGGCACAACGCCCTTGAAGATG
 CCTACATAACCGCTCTTCTTTTCTAAAGTACGTTTACCCGAACAGGGAG 600
 TACAGACTAAAGGATCTCCCGATTTTCCTT

FIG. 44

MNFLKKFLLLRKAQKSPYFEEFYEEIDLNQKVKDARFVVFDCATELDVK
 KAKLLSIGAVEVKNLEIDLKSFYEILKSDEIKAAEIHGITREDVEKYGK 100
 EPKEVIYDFLKYIKGSVLVGYVVKFDVSLVEKYSIKYFQYPIINYKLDLF
 SFVKREYQSGRSLDDLMKELGVEIRARHNALEDAYITALLFLKYVYPNRE 200
 YRLKDLPIFL

FIG. 45

ATGCTCAATAAGGTTTTTATAATAGGAAGACTTACGGGTGACCCCGTTAT	
AACTTATCTACCGAGCGGAACGCCCGTAGTAGAGTTTACTCTGGCTTACA	100
ACAGAAGGTATAAAAACCAGAACGGTGAATTTTCAGGAGGAAAGTCACTTC	
TTTGACGTAAAGGCGTACGGAAAAATGGCTGAAGACTGGGCTACAGGCTT	200
CTCGAAAGGATACCTCGTACTCGTAGAGGGAAGACTCTCCAGGAAAAGT	
GGGAGAAAGAAGGAAAGAAGTTCTCAAAGGTCAGGATAATAGCGGAAAAC	300
GTAAGATTAATAAACAGGCCGAAAGGTGCTGAACTTCAAGCAGAAGAAGA	
GGAGGAAGTTCCTCCCATTTGAGGAGGAAATTGAAAACTCGGTAAAGAGG	400
AAGAGAAGCCTTTTACCGATGAAGAGGACGAAATACCTTTTTTAATTTGA	
GGAGGTTAAAGTATGGTAGTGAGAGCTCCTAAGAAGAAAGTTTGTATGTA	500
CTGTGAACAAAAGAGAGAGCCAGATT	

FIG. 46

MLNKVFIIGRLTGDPVITYLPSGTPVVEFTLAYNRRYKNQNGEFQEESHF	
FDVKAYGKMAEDWATRFSGYLVLEGRLSQEKWEKEGKKFSKVRIIAEN	100
VRLINRPKGAELQAEIEEEVPPIEEEIEKLGKEEEKPFTDEEDEIPF	

FIG. 47

ATGCAATTTGTGGATAAACTTCCCTGTGACGAATCCGCCGAGAGGGCGGT	
TCTTGGCAGTATGCTTGAAGACCCCGAAAACATACCTCTGGTACTTGAAT	100
ACCTTAAAGAAGAAGACTTCTGCATAGACGAGCACAAGCTACTTTTCAGG	
GTTCTTACAAACCTCTGGTCCGAGTACGGCAATAAGCTCGATTTTCGTATT	200
AATAAAGGATCACCTTGAAAAGAAAACTTACTCCAGAAAATACCTATAG	
ACTGGCTCGAAGAACTCTACGAGGAGGCGGTATCCCCTGACACGCTTGAG	300
GAAGTCTGCAAAATAGTAAAACAACGTTCCGCACAGAGGGCGATAATTCA	
ACTCGGTATAGAACTCATTACAAAGGAAAGGAAAACAAAGACTTTTACA	400
CATTAATCGAGGAAGCCCAGAGCAGGATATTTTCCATAGCGGAAAGTGCT	
ACATCTACGCAGTTTTACCATGTGAAAGACGTTGCGGAAGAAGTTATAGA	500
ACTCATTTATAAATTCAAAAGCTCTGACAGGCTAGTCACGGGACTCCCAA	
GCGGTTTTACGGAACTCGATCTAAAGACGACGGGATTCCACCCTGGAGAC	600
TTAATAATACTCGCCGAAGACCCGGTATGGGGAAAACCGCCTTTATGCT	
CTCCATAATCTACAATCTCGCAAAAGACGAGGGAAAACCTCAGCTGTAT	700
TTTCCTTGGAATGAGCAAGGAACAGCTCGTTATGAGACTCCTCTCTATG	
ATGTCGGAGGTCCCACTTTTCAAGATAAGGTCTGGAAGTATATCGAATGA	800
AGATTTAAAGAAGCTTGAAGCAAGCGCAATAGAACTCGCAAAGTACGACA	
TATACCTCGACGACACACCCGCTCTCACTACAACGGATTTAAGGATAAGG	900
GCAAGAAAGCTCAGAAAGGAAAAGGAAGTTGAGTTCGTGGCGGTGGACTA	
CTTGCAACTTCTGAGACCGCCAGTCCGAAAGAGTTCAAGACAGGAGGAAG	1000
TGGCAGAGGTTTTCAAGAACTTAAAAGCCCTTGCAAAGGAACTTCACATT	
CCCGTTATGGCACTTGCGCAGCTCTCCCGTGAGGTGGAAAAGAGGAGTGA	1100
TAAAAGACCCAGCTTGCGGACCTCAGAGAATCCGGACAGATAGAACAGG	
ACGCAGACCTAATCCTTTTCTCCACAGACCCGAGTACTACAAGAAAAAG	1200
CCAAATCCCGAAGAGCAGGGTATAGCGGAAGTGATAATAGCCAAGCAAAG	
GCAAGGACCCACGGACATTGTGAAGCTCGCATTATTAAAGGAGTACACTA	1300
AGTTTGCAAACCTAGAAGCCCTTCTGAACAACCTCCTGAAGAAGAGGAA	
CTTTCCGAAATTATTGAAACACAGGAGGATGAAGGATTGAAGATATTGA	1400
CTTCTGAAAATTAAGGTTTTATAATTTTATCTTGGCTATCCGGGGTAGCT	
CAATCGGCAGAGCGGGTGGCTG	1472

FIG. 48

MQFVDKLPCEAERAVLGSMLEDPENIPLVLEYLKEEDFCIDEHKLLFR	
VLTNLWSEYGNKLDVLIKDHLEKKNLLQKIPIDWLEELYEEAVSPDTLE	100
EVCKIVKQRSAQRAIIQLGITSTQFYHVKDVAEEVIELIYKFKSSDRLVT	
GLPSGFTELDLKTTFHPGDLIILAARPGMGKTAFMLSI IYNLAKDEGKP	200
SAVFSLEMSKEQLVMRLLSMMSEVPLFKIRSGSISNEDLKKLEASAIELA	
KYDIYLDLTPALTTTDLRIRARKLRKEKEVEFVAVDYLQLLRPPVRKSSR	300
QEEVAEVSRLKALAKELHIPVMALAQLSREVEKRSDKRPQLADLRESGQ	
IEQDADLILFLHRPEYYKKKPNPEEQGIAEVI IAKQROGPTDIVKLAFIK	400
EYTKFANLEALPEQPPEEEELSEI IETQDEDEGFEDIDF	

FIG. 49

ATGTCCTCGGACATAGACGAACTTAGACGGGAAATAGATATAGTAGACGT	
CATTTCCGAATACTTAACTTAGAGAAGGTAGGTTCCAATTACAGAACGA	100
ACTGTCCCTTTTACCCTGACGATACCCCTCCTTTTACGTGTCTCCAAGT	
AAACAAATATTCAAGTGTTTCGGTTGCGGGGTAGGGGGAGACGCGATAAA	200
GTTTCGTTTCCCTTTACGAGGACATCTCCTATTTTGAAGCCGCCCTTGAAC	
TCGCAAAACGCTACGGAAGAAATTAGACCTTGAAAAGATATCAAAGAC	300
GAAAAGGTATACGTGGCTCTTGACAGGGTTTGTGATTTCTACAGGGAAAG	
CCTTCTCAAAAACAGAGAGGCAAGTGAGTACGTAAAGAGTAGGGGAATAG	400
ACCCTAAAGTAGCGAGGAAGTTTGATCTTGGGTACGCACCTTCCAGTGAA	
GCACTCGTAAAAGTCTTAAAAGAGAACGATCTTTTAGAGGCTTACCTTGA	500
AACTAAAAACCTCCTTTCTCCTACGAAGGGTGTTTACAGGGATCTCTTTC	
TTCCGGCGTGTCGTGATCCCGATAAAGGATCCGAGGGGAAGAGTTATAGGT	600
TTCCGGTGGAAGGAGGATAGTAGAGGACAAATCTCCAAGTACATAAACTC	
TCCAGACAGCAGGGTATTTAAAAAGGGGGAGAACTTATTCGGTCTTTACG	700
AGGCAAAGGAGTATATAAAGGAAGAAGGATTTGCGATACTTGTGGAAGGG	
TACTTTGACCTTTTGAGACTTTTTTCCGAGGGGAATAAGGAACGTTGTTGC	800
ACCCCTCGGTACAGCCCTGACCCAAAATCAGGCAAACCTCCTTTCCAAGT	
TCACAAAAAAGGTCTACATCCTTTACGACGGAGATGATGCGGGAAGAAAG	900
GCTATGAAAAGTGCCATTCCCCTACTCCTCAGTGCAGGAGTGGAAGTTTA	
TCCCGTTTACCTCCCCGAAGGATACGATCCCGACGAGTTTATAAAGGAAT	1000
TCGGGAAAGAGGAATTAAGAAGACTGATAAACAGCTCAGGGGAGCTCTTT	
GAAACGCTCATAAAAACCGCAAGGGAAAACCTTAGAGGAGAAAACGCGTGA	1100
GTTCAGGTATTATCTGGGCTTTATTTCCGATGGAGTAAGGCGCTTTGCTC	
TGGCTTCGGAGTTTCACACCAAGTACAAAGTTCCTATGGAAATTTTATTA	1200
ATGAAAATTGAAAAAATTCTCAAGAAAAAGAAATTAAGTCTCCTTTAA	
GGAAAAAATCTTCCTGAAAGGACTGATAGAATTAACCAAAAATAGACC	1300
TTGAAGTCCTGAACTTAAGTCCTGAGTTAAAGGAACTCGCAGTTAACGCC	
TAAACGGAGAGGAGCATTTACTTCCAAAAGAAGTTCTCGAGTACCAGGT	1400
GGATACTTGGAGAACTTTTTAACAACATCCTTAGGGATTTACAAAAAT	
CTGGGAAAAAGAGGAAGAAAAGAGGGTTGAAAATGTAAATACTTAATTA	1500
ACTTTAATAAATTTTATAGAGTTAGGA	

FIG. 50

MSSDIDELRREIDIVDVI SEYLNLEKVGSNYRTNCPFHPDDTPSFYVSPS	
KQIFKFCGCGVGDAIKFVSLYEDISYFEAALELAKRYGKKLDLEKISKD	100
EKVYVALDRVCDFYRESLLKNREASEYVKSRGIDPKVARKFDLGYAPSSE	
ALVKVLKENDLLEAYLETKNLLSPTKGVYRDLFLRRVVIPIKDPRGRVIG	200
FGRRIVEDKSPKYINSPDSRVFKKGENLFGLYEKEYIKEEGFAILVEG	
YFDLLRLFSEGIRNVVAPLGTALTQNQANLLSKFTKKVYILYDGD DAGRK	300
AMKSAIPLLLSAGVEVYPVYLPEGYDPDEFIKEFGKEELRRLINSSGELF	
ETLIKTARENLEEKTRFRYYLGFISDGVRRFALASEFHTKYKVPMEILL	400
MKIEKNSQEKEIKLSFKEKIFLKGLIELKPKIDLEVLNLSPELKE LAVNA	
LNGEEHLLPKEVLEYQVDNLEKLFNNILRDLQKSGKKRKKRGLKNVNT	498

FIG. 51

ATGCAAGATACCGCTACCTGCAGTATTTGTCAGGGGACGGGATTCTGTA
 GACCGAAGACAACAAGGTAAGGCTCTGCGAATGCAGGTTCAAGAAAAGGG 100
 ATGTAAACAGGGAACTAAACATCCCAAAGAGGTACTGGAACGCCAACTTA
 GACACTTACCACCCCAAGAACGTATCCAGAACAGGGCACTTTTGACGAT 200
 AAGGGTCTTCGTCCACAACCTTCAATCCCGAGGAAGGGAAAGGGCTTACCT
 TTGTAGGATCTCCTGGAGTCGGCAAACTCACCTTGCGGTTGCAACATTA 300
 AAAGCGATTTATGAGAAGAAGGGAATCAGAGGATACTTCTTCGATACGAA
 GGATCTAATATTCAGGTTAAAACACTTAATGGACGAGGGAAGGATACAA 400
 AGTTTTTAAAACTGTCTTAACTCACCGGTTTTGGTTCTCGACGACCTC
 GTTCTGAGAGGCTCAGTGACTGGCAGAGGGAACCTCATCTCTTACATAAT 500
 CACTTACAGGTATAACAACCTTAAGAGCACGATAATAACCACGAATTACT
 CACTCCAGAGGGAAGAAGAGAGTAGCGTGAGGATAAGTGCGGATCTTGCA 600
 AGCAGACTCGGAGAAAACGTAGTTTCAAAAATTTACGAGATGAACGAGTT
 GCTCGTTATAAAGGGTCCGACCTCAGGAAGTCTAAAAAGCTATCAACCC 700
 CATCT

FIG. 52

MQDTATCSICQGTGFVKTEDNKNVRLCECRFKKRDVNRELNIPKRYWNANL
 DTYHPKNVSQNRALLTIRVFVHNFNPEEGKGLTFVGSPGVGKTHLAVATL 100
 KAIYEKKGIRGYFFDTKDLIFRLKHLMDGKDTKFLKTVLNSPVLVLDL
 GSERLSDWQRELISYIITYRYNNLKSTIITNYSLQREEESSVRISADLA 200
 SRLGENVVSKIYEMNELLVIKGSDLRKS KKLSTPS

FIG. 53

ATGAAAAAGATTGAAAATTTGAAGTGGAAAAATGTCTCGTTTAAAAGCCT	100
GGAAATAGATCCCGATGCAGGTGTGGTTCTCGTTTCCGTGGAAAAATTCT	
CCGAAGAGATAGAAGACCTTGTGCGTTTACTGGAGAAGAAGACGCGGTTT	200
CGAGTCATCGTGAACGGTGTTCAAAAAAGTAACGGGGATCTAAGGGGAAA	
GATACTTTCCCTTCTCAACGGTAATGTGCCTTACATAAAAGATGTTGTTT	300
TCGAAGGAAACAGGCTGATTCTGAAAGTGCTTGGAGATTTTCGCGCGGGAC	
AGGATCGCCTCCAACTCAGAAGCACGAAAAACAGCTCGATGAACTGCT	400
GCCTCCCGGAACAGAGATCATGCTGGAGGTTGTGGAGCCTCCGGAAGATC	
TTTTGAAAAAGGAAGTACCACAACCAGAAAAGAGAGAAGAACCAGGGT	500
GAAGAATTGAAGATCGAGGATGAAAACCATCTTTGGACAGAAACCCAG	
AAAGATCGTCTTCACCCCTCAAAAATCTTTGAGTACAACAAAAAGACAT	600
CGGTGAAGGGCAAGATCTTCAAAATAGAGAAGATCGAGGGGAAAAGAACG	
GTCTTCTGATTTACCTGACAGACGGAGAAGATTCTCTGATCTGCAAAGT	700
CTTCAACGACGTTGAAAAGGTCTGAAGGGAAAGTATCGGTGGGAGACGTGA	
TCGTTGCCACAGGAGACCTCCTTCTCGAAAACGGGGAGCCCACCCTTTAC	800
GTGAAGGGAATCACAAAACCTCCCGAAGCGAAAAGGATGGACAAATCTCC	
GGTTAAGAGGGTGGAGCTCCACGCCCATAACCAAGTTCAGCGATCAGGACG	900
CAATAACAGATGTGAACGAATATGTGAAACGAGCCAAGGAATGGGGCTTT	
CCCGCGATAGCCCTCACGGATCATGGGAACGTTCAAGCCATACCTTACTT	1000
CTACGACGCGGCGAAAGAAGCTGGAATAAAGCCATTTTCGGTATCGAAG	
CGTATCTGGTGAGTGACGTGGAGCCCGTCATAAGGAATCTCTCCGACGAT	1100
TCGACGTTTGGAGATGCCACGTTCTGTCCTCGACTTCGAGACGACGGG	
TCTCGACCCGCAGGTGGATGAGATCATCGAGATAGGAGCGGTGAAGATAC	1200
AGGGTGGCCAGATAGTGGACGAGTACCACACTCTCATAAAGCCTTCCAGG	
GAGATCTCAAGAAAAAGTTCTGGAGATCACCGGAATCACTCAAGAGATGCT	1300
GGAAAAAAGAGAAGCATCGAGGAAGTTCTGCCGGAGTTCTCGGTTTTC	
TGGAAGATTCCATCATCGTAGCACACAACGCCAACTTCGACTACAGATTT	1400
CTGAGGCTGTGGATCAAAAAAGTGATGGGATTGGACTGGGAAAGACCCTA	
CATAGATACGCTCGCCCTCGCAAAGTCCCTTCTCAAACCTGAGAAGCTACT	1500
CTCTGGATTCCGTTGTGGAAAAGCTCGGATTGGGTCCCTTCCGGCACCAC	
AGGGCCCTGGATGACGCGAGGGTCAACGCTCAGGTTTTCTCAGGTTCTG	1600
TGAGATGATGAAGAAGATCGGTATCACGAAGCTTTCAGAAATGGAGAAGT	
TGAAGGATACGATAGACTACACCGCGTTGAAACCCTTCCACTGCACGATC	1700
CTCGTTTCAGAACAAAAAGGGATTGAAAAACCTATACAAACTGGTTTCTGA	
TTCTATATAAAGTACTTCTACGGTGTTCGAGGATCCTCAAAAGTGAGC	1800
TCATCGAGAACAGAGAAGGACTGCTCGTGGGTAGCGCGTGTATCTCCGGT	
GAGCTCGGACGTGCCGCCCTCGAAGGAGCGAGTGATTCAGAACTCGAAGA	1900
GATCGCGAAGTTCTACGACTACATAGAAGTCATGCCGCTCGACGTTATAG	
CCGAAGATGAAGAAGACCTAGACAGAGAAAGACTGAAAGAAGTGATACCGA	2000
AAACTCTACAGAATAGCGAAAAAATTGAACAAGTTCGTTCGTATGACCGG	
TGATGTTTCAATTTCTCGATCCCGAAGATGCCAGGGGCAGAGCTGCACTTC	2100
TGGCACCTCAGGGAAACAGAACTTCGAGAATCAGCCCGCACTCTACCTC	
AGAACGACCGAAGAAATGCTCGAGAAGGCGATAGAGATATTCTGAAGATGA	2200
AGAGATCGCGAGGGAAGTCTGTAGAGAAATCCCAACAGAATAGCCGATA	
TGATCGAGGAAGTGCAGCCGCTCGAGAAAAAATTCACCCGCCGATCATA	2300
GAGAACGCCGATGAAATAGTGAGAAACCTCACCATGAAGCGGGCGTACGA	
GATCTACGGTGATCCGCTTCCCGAAATCGTCCAGAAGCGTGTGGAAAAGG	

FIG. 54A

AACTGAACGCCATCATAAATCATGGATACGCCGTTCTCTATCTCATCGCT 2400
 CAGGAGCTCGTTCAGAAATCTATGAGCGATGGTTACGTGGTTGGATCCAG
 AGGATCCGTCGGGTCTTCACTCGTGGCCAATCTCCTCGGAATAACAGAGG 2500
 TGAATCCCCTACCACCACATTACAGGTGTCCAGAGTGCAAATACTTTGAA
 GTTGTCTGAAGACGACAGATACGGAGCGGGTTACGACCTTCCCAACAAGAA 2600
 CTGTCCAAGATGTGGGGCTCCTCTCAGAAAAGACGGCCACGGCATAACCGT
 TTGAAACGTTTCATGGGGTTCGAGGGTGACAAGGTCCCCGACATAGATCTC 2700
 AACTTCTCAGGAGAGTATCAGGAACGTGCTCATCGTTTTGTGGAAGAACT
 CTTTCGGTAAAGACCACGTCTATAGGGCGGAACCATAAACACCATCGCGG 2800
 AAAGAAGTGCGGTGGGTACGTGAGAAGCTACGAAGAGAAAACCGGAAAG
 AAGCTCAGAAAGGCGGAAATGGAAAGACTCGTTTCATGATCACGGGAGT 2900
 GAAGAGAACGACGGGTCTAGCAGCCAGGGGGGCTCATGATCATACCGAAAG
 ACAAAGAAGTCTACGATTTCACTCCCATACAGTATCCAGCCAACGATAGA 3000
 AACGCAGGTGTGTTTACCACGCACTTCGCATACGAGACGATCCATGATGA
 CCTGGTGAAGATAGATGCGCTCGGCCACGATGATCCCACTTTTCATCAAGA 3100
 TGCTCAAGGACCTCACCGGAATCGATCCCATGACGATTCCCATGGATGAC
 CCCGATACGCTCGCCATATTCAGTTCTGTGAAGCCTCTTGGTGTGGATCC 3200
 CGTTGAGCTGGAAAGCGATGTGGGAACGTACGGAATTCCGGAGTTCGGAA
 CCGAGTTTGTGAGGGGAATGCTCGTTGAAACGAGACCAAAGAGTTTCGCC 3300
 GAGCTTGTGAGAATCTCAGGACTGTACACGGTACGGACGTCTGGTTGAA
 CAACGCACGTGATTGGATAAACCTCGGCTACGCCAAGCTCTCCGAGGTTA 3400
 TCTCGTGTAGGGACGACATCATGAACTTCCTCATACACAAAGGAATGGAA
 CCGTCACTTGCCTTCAAGATCATGGAAAACGTACGGAAGGGAAAGGGTAT 3500
 CACAGAAGAGATGGAGAGCGAGATGAGAAGGCTGAAGGTTCAGAATGGT
 TCATCGAATCCTGTAAAAGGATCAAATATCTCTTCCCGAAAGCTCACGCT 3600
 GTGGCTTACGTGAGTATGGCCTTCAGAATTGCTTACTTCAAGGTTCACTA
 TCCTCTTCAGTTTTACGCGGCGTACTTCACGATAAAAGGTGATCAGTTTCG 3700
 ATCCGGTTCTCGTACTCAGGGGAAAAGAAGCCATAAAGAGGCGCTTGAGA
 GAACTCAAAGCGATGCCTGCCAAAGACGCCCAGAAGAAAAACGAAGTGAG 3800
 TGTCTCGAGGTTGCCCTGGAAATGATACTGAGAGGTTTTCTTCTTCTAC
 CGCCCGACATCTTCAAATCCGACGCGAAGAAATTTCTGATAGAAGGAAAC 3900
 TCGCTGAGAATTCCGTTCAACAAACTTCAGGACTGGGTGACAGCGTTGC
 CGAGTCGATAATCAGAGCCAGGGAAGAAAAGCCGTTCACTTCGGTGGAAG 4000
 ATCTCATGAAGAGGACCAAGGTCAACAAAAATCACATAGAGCTGATGAAA
 AGCCTGGGTGTTCTCGGGGACCTTCAGAGACGGAACAGTTTCACGCTTTT 4100

C

FIG. 54B

MKKIENLKWKNVSFKSLEIDPDAGVVLVSVEKFSEEIEDLVRLLLEKKTRF	
RVIVNGVQKSNGDLRGKILSLNGNVPYIKDVVFEGNRLILKVLGDFARD	100
RIASKLRSTKKQLDELLPPGTEIMLEVVEPPEDLLKKEVPQPEKREEPKG	
EELKIEDENHIFGQKPRKIVFTPSKIFEYNKKTSVKGKIFKIEKIEGKRT	200
VLLIYLTGDGSLICKVFNDVEKVEGKVSVDVIVATGDLLENGEPTLY	
VKGITKLPEAKRMDKSPVKRVELHAHTKFSQDAITDVNEYVKRAKEWGF	300
PAIALTDHGNVQAIPIFYDAAKEAGIKPIFGIEAYLVSDVEPVIRNLSDD	
STFGDATFVVLDFETTGLDPQVDEIIEIGAVKIQGGQIVDEYHTLIKPSR	400
EISRKSSEITGITQEMLENKRSIEEVLPEFLGFLEDSIIVAHNANFDYRF	
LRLWIKKVMGLDWERPYIDTLALAKSLLKLSYSLSVVEKLGFGPFRHH	500
RALDDARVTAQVFLRFVEMMKIGITKLSEMEKLDKDTIDYTALKPFHCTI	
LVQNKKGKLNLYKLVSDSYIKYFYGVPRILKSELINREGLLVGSACISG	600
ELGRAALEGASDSELEEIAKFYDYIEVMPLDVIAEDEEDLDRERLKEVYR	
KLYRIAKLKNKFVMTGVDVHFLDPEDARGRAALLAPQGNRNFFENQPALYL	700
RTTEEMLEKAIEIFEDEEIAREVVIENPNRIADMIEEVQPLEKKLHPPII	
ENADEIVRNLTMKRAYEIIYGDPLPEIVQKRVEKELNAIINHGYAVLYLIA	800
QELVQKSMSDGYVVGSRGSSLVANLLGITEVNPLPPHYRCPECKYFE	
VVEDDRYGAGYDLPNKNCPRCGAPLRKDGHGIPFETFMGFEGDKVPDIDL	900
NFSGEYQERAHRFVEELFGKDHVYRAGTINTIAERSAVGYVRSYEEKTGK	
KLRKAEMERLVSMITGVKRTTGQHPGGLMIIPKDKEVYDFTPIQYPANDR	1000
NAGVFTTHFAYETIHDDLVKIDALGHDDPTFIKMLKDLTGIDPMTIPMDD	
PDTLAISSVKPLGVDPVELESVDGTYGIPFEGTEFVRGMLVETRPKSFA	1100
ELVRISGLSHGTDVWLNWARDWINLGYAKLSEVISCRDDIMNFLIHKGME	
PSLAFKIMENVRKKGKITEEMESEMRRLKVPEWFIESCKRIKYLEPKAHA	1200
VAYVSMAFRIAYFKVHYPLQFYAAAYFTIKGDQFDPVLVLRGKEAIKRRLR	
ELKAMPAKDAQKNEVSVLEVALEMILRGFSFLPPDIFKSDAKKFLIEGN	1300
SLRIPFNKLPGLGDSVAESIIRAREEKPFTSVEDLMKRTKVNKNHIELMK	
SLGVLGDLPETEQFTLF	1367

FIG. 55

GTGCTCGCCATGATATGGAACGACACCGTTTTTTGCGTCGTAGACACAGA
 AACCACGGGAACCGATCCCTTTGCCGGAGACCGGATAGTTGAAATAGCCG 100
 CTGTTCTGTCTTCAAGGGGAAGATCTACAGAAACAAAGCGTTTCACTCT
 CTCGTGAATCCCAGAATAAGAATCCCTGCGCTGATTCAGAAAGTTCACGG 200
 TATCAGCAACATGGACATCGTGGAAGCGCCAGACATGGACACAGTTTACG
 ATCTTTTCAGGGATTACGTGAAGGGAACGGTGCTCGTGTTTCACAACGCC 300
 AACTTCGACCTCACTTTTCTGGATATGATGGCAAAGGAAACGGGAACTT
 TCCAATAACGAATCCCTACATCGACACACTCGATCTTTCAGAAGAGATCT 400
 TTGGAAGGCCTCATTCTCTCAAATGGCTCTCCGAAAGACTTGGAATAAAA
 ACCACGATACGGCACCGTGCTCTTCCAGATGCCCTGGTGACCGCAAGAGT 500
 TTTTGTGAAGCTTGTTGAATTTCTTGGTGAAAACAGGGTCAACGAATTCA
 TACGTGGAAAACGGGGG 567

FIG. 56

MLAMIWNDTVFCVVDTETTGTDPFAGDRIVEIAAVPVFKGKIYRNKAFHS
 LVNPRIRIPALIQKVHGISNMDIVEAPDMDTVYDLFRDYVKGTVLVFHNA 100
 NFDLTFLDMMAKETGNFPITNPYIDTLDLSEEIFGRPHSLKWLSERLGIK
 TTIRHRALPDALVTARVFVKLVEFLGENRVNEFIRGKRG 189

FIG. 57

GTGGAAGTTCTTTACAGGAAGTACAGGCCAAAGACTTTTCTGAGGTTGT	
CAATCAGGATCATGTGAAGAAGGCAATAATCGGTGCTATTTCAGAAGAACA	100
GCGTGGCCCACGGATACATATTCGCCGGTCCGAGGGGAACGGGGAAGACT	
ACTCTTGCCAGAATTCTCGCAAATCCCTGAACTGTGAGAACAGAAAGGG	200
AGTTGAACCCTGCAATTCCTGCAGAGCCTGCAGAGAGATAGACGAGGGAA	
CCTTCATGGACGTGATAGAGCTCGACGCGGCCTCCAACAGAGGAATAGAC	300
GAGATCAGAAGAATCAGAGACGCCGTTGGATACAGGCCGATGGAAGGTAA	
ATACAAAGTCTACATAATAGACGAAGTTCACATGCTCACGAAAGAAGCCT	400
TCAACGCGCTCCTCAAAACACTCGAAGAACCTCCTTCCCACGTCGTGTTT	
GTGCTGGCAACGACAAACCTTGAGAAGGTTCTTCCCACGATTATCTCGAG	500
ATGTCAGGTTTTCGAGTTCAGAAACATTCCCGACGAGCTCATCGAAAAGA	
GGCTCCAGGAAGTTGCGGAGGCTGAAGGAATAGAGATAGACAGGGAAGCT	600
CTGAGCTTCATCGCAAAAAGAGCCTCTGGAGGCTTGAGAGACGCGCTCAC	
CATGCTCGAGCAGGTGTGGAAGTTCCTCGGAAGGAAAGATAGATCTCGAGA	700
CGGTACACAGGGCGCTCGGGTTGATACCGATACAGGTTGTTTCGCGATTAC	
GTGAACGCTATCTTTTCTGGTGATGTGAAAAGGGTCTTCACCGTTCTCGA	800
CGACGTCTATTACAGCGGGAAGGACTACGAGGTGCTCATTTCAGGAAGCAG	
TCGAGGATCTGGTCGAAGACCTGGAAGGGAGAGAGGGGTTTACCAGGTT	900
TCAGCGAACGATATAGTTTCAGGTTTCGAGACAACCTTCTGAATCTTCTGAG	
AGAGATAAAGTTCGCCGAAGAAAAACGACTCGTCTGTAAAGTGGGTTCCG	1000
CTTACATAGCGACGAGGTTCTCCACCACAAACGTTTCAGGAAAACGATGTC	
AGAGAAAAAACGATAATTCAAATGTACAGCAGAAAGAAGAGAAGAAAGA	1100
AACGGTGAAGGCAAAAGAAGAAAAACAGGAAGACAGCGAGTTCGAGAAAC	
GCTTCAAAGAACTCATGGAAGAACTGAAAGAAAAGGGCGATCTCTCTATC	1200
TTTGTCGCTCTCAGCCTCTCAGAGGTGCAGTTTGACGGAGAAAAGGTGAT	
TATTTCTTTTGATTTCATCGAAAGCTATGCATTACGAGTTGATGAAGAAAA	1300
AACTGCCTGAGCTGGAAAACATTTTTTCTAGAAAACTCGGGAAAAAAGTA	
GAAGTTGAACTTCGACTGATGGGAAAAGAAGAAACAATCGAGAAGGTTTC	1400
TCAGAAGATCCTGAGATTGTTTGAACAGGAGGGA	

FIG. 58

MEVLYRKYPKTFSEVVNQDHVKKAIIGAIQKNSVAHGYIFAGPRGTGKT	
TLARILAKSLNCENRKGVEPCNSCRACREIDEGTFMDVIELDAASNRGID	100
EIRRIRDAVGYPMEGKYKVYIIDEVHMLTKEAFNALLKTLEPPSHVVF	
VLATTNLEKVPPTIISRCQVFEFRNIPDELIEKRLQEVAAEAGIEIDREA	200
LSFIKRASGGLRDALTMLEQVWKFSEGKIDLETVHRAIGLPIQVVRDY	
VNAIFSGDVKRFTVLDDVYYSKDYEVLIQEAVEDLVEDLERERGVYQV	300
SANDIVQVSRQLLNLLREIKFAEEKRLVCKVGSAYIATRFSTTNVQENDV	
REKNDNSNVQQKEEKETVKAKEEKQEDSEFEKRFKELMEELKEKGDLSI	400
FVALSLSEVQFDGEKVIISFDSSKAMHYELMKKKLPELENIFSRKLGKKV	
EVELRLMGKEETIEKVSQKILRLFEQEG	478

FIG. 59

ATGAAAGTAACCGTCACGACTCTTGAATTGAAAGACAAAATAACCATCGC	
CTCAAAAGCGCTCGCAAAGAAATCCGTGAAACCCATTCTTGCTGGATTTC	100
TTTTCGAAGTGAAAGATGGAAATTTCTACATCTGCGCGACCGATCTCGAG	
ACCGGAGTCAAAGCAACCGTGAATGCCGCTGAAATCTCCGGTGAGGCACG	200
TTTTGTGGTACCAGGAGATGTCATTGAGAAGATGGTCAAGGTTCTCCAG	
ATGAGATAACGGAACTTTCTTTAGAGGGGGATGCTCTTGTTATAAGTTCT	300
GGAAGCACCGTTTTTCAGGATCACCACCATGCCCCGCGACGAATTTCCAGA	
GATAACGCCTGCCGAGTCTGGAATAACCTTCGAAGTTGACACTTCGCTCC	400
TCGAGGAAATGGTTGAAAAGGTCATCTTCGCCGCTGCCAAAGACGAGTTC	
ATGCGAAATCTGAATGGAGTTTTCTGGGAACTCCACAAGAATCTTCTCAG	500
GCTGGTTGCAAGTGATGGTTTCAGACTTGCACTTGCTGAAGAGCAGATAG	
AAAACGAGGAAGAGGCGAGTTTTCTTGCTCTCTTTGAAGAGCATGAAAGAA	600
GTTCAAAACGTGCTGGACAACACAACGGAGCCGACTATAACGGTGAGGTA	
CGATGGAAGAAGGGTTTTCTCTGTCGACAAATGATGTAGAAACGGTGATGA	700
GAGTGGTCGACGCTGAATTTCCCGATTACAAAAGGGTGATCCCCGAACT	
TTCAAAACGAAAGTGGTGGTTTTCCAGAAAAGAACTCAGGGAATCTTTGAA	800
GAGGGTGATGGTGATTGCCAGCAAGGGAAGCGAGTCCGTGAAGTTCGAA	
TAGAAGAAAACGTTATGAGACTTGTGAGCAAGAGCCCGGATTATGGAGAA	900
GTGGTCGATGAAGTTGAAGTTCAAAAAGAAGGGGAAGATCTCGTGATCGC	
TTTCAACCCGAAGTTCATCGAGGACGTTTTTGAAGCACATTGAGACTGAAG	1000
AAATCGAAATGAACTTCGTTGATTCTACCAGTCCATGTCAGATAAATCCA	
CTCGATATTTCTGGATACCTTTACATAGTGATGCCCATCAGACTGGCA	1098

FIG. 60

MKVTVTTLLELKDKITIASKALAKKSVKPILAGFLFEVKDGNFYICATDLE	
TGVKATVNAAEISGEARFVVPGDVIQKMKVLPDEITELSLGDALVISS	100
GSTVFRITTMPADEFPFITPAESGITFEVDTSLLEEMVEKVIFAAAKDEF	
MRNLNGVFWEHLKNNLLRLVASDGFRLALAEQIENEEASFLLSLKSMKE	200
VQNVLDNTTEPTITVRYDGRVSLSTNDVETVMRVVDAEFPDYKRVIPET	
FKTKVVSRKELRESLKRVMVIAASKGSESVKFEIEENVMLVSKSPDYGE	300
VVDEVEVQKEGEDLVIAFNPKFIEDVLKHIETEEIEMNFVDSTSPCQINF	
LDISGYLYIVMPIRLA	366

FIG. 61

ATGCCAGTCACGTTTCTCACAGGTACTGCAGAACTCAGAAGGAAGAATT	
GATAAAGAACTCCTGAAGGATGGTAACGTGGAGTACATAAGGATCCATC	100
CGGAGGATCCCGACAAGATCGATTTCATAAGGTCTTTACTCAGGACAAAG	
ACGATCTTTTCCAACAAGACGATCATTGACATCGTCAATTTTCGATGAGTG	200
GAAAGCACAGGAGCAGAAGCGTCTCGTTGAACTTTTGAAAAACGTACCGG	
AAGACGTTTCATATCTTCATCCGTTCTCAAAAAACAGGTGGAAAGGGAGTA	300
GCGCTGGAGCTTCCGAAGCCATGGGAAACGGACAAGTGGCTTGAGTGGAT	
AGAAAAGCGCTTCAGGGAGAATGGTTTGCTCATCGATAAAGATGCCCTTC	400
AGCTGTTTTTCTCCAAGGTTGGAACGAACGACCTGATCATAGAAAGGGAG	
ATTGAAAAACTGAAAGCTTATTCCGAGGACAGAAAGATAACGGTAGAAGA	500
CGTGGAAGAGGTCGTTTTTACCTATCAGACTCCGGGATACGATGATTTTT	
GCTTTGCTGTTTCCGAAGGAAAAAGGAAGCTCGCTCACTCTCTTCTGTCTG	600
CAGCTGTGGAACACACAGAGTCCGTGGTGATTGCCACTGTCCTTGCGAA	
TCACTTCTTGGATCTCTTCAAAATCCTCGTTCTTGTGACAAAGAAAAGAT	700
ACTACACCTGGCCTGATGTGTCCAGGGTGTCCAAAGAGCTGGGAATTCCC	
GTTCTCGTGTGGCTCGTTTCCTCGGTTTCTCCTTTAAGACCTGGAAATT	800
CAAGGTGATGAACCACCTCCTCTACTACGATGTGAAGAAGGTTAGAAAGA	
TACTGAGGGATCTCTACGATCTGGACAGAGCCGTGAAAAGCGAAGAAGAT	900
CCAAAACCGTTCTTCCACGAGTTCATAGAAGAGGTGGCACTGGATGTATA	
TTCTCTTCAGAGAGATGAAGAA	972

FIG. 62

MPVTFLTGTAEQKEELIKLLKDGNEVEYIRIHPEDPDKIDFIRSLRLTK	
TIFSNTIIDIIVNFDEWKAQEQRLVELLKNVPEDVHIFIRSQKTGGKGV	100
ALELPKPWETDKWLEWIEKRFRENGLLIDKDALQLFFSKVGTNDLI IERE	
IEKLKAYSEDRKITVEDVEEVVFTYQTPGYDDFCFAVSEGKRKLAHSLLS	200
QLWKTTESVVIATVLANHFLDLFKILVLVTKKRYYTWPDVSRVSKELGIP	
VPRVARFLGFSFKTWKFKVMNHLLYYDVKKVRKILRDLYDLDRVAVKSEED	300
PKPFFHEFIEEVALDVYSLQDEE	

FIG. 63

ATGAACGATTTGATCAGAAAGTACGCTAAAGATCAACTGGAACTTTGAA	100
AAGGATCATAGAAAAGTCTGAAGGAATATCCATCCTCATAAATGGAGAAG	
ATCTCTCGTATCCGAGAGAAGTATCCCTTGAAGTTCCCGAGTACGTGGAG	200
AAATTTCCCCCGAAGGCCTCGGATGTTCTGGAGATAGATCCCGAGGGGGA	
GAACATAGGCATAGACGACATCAGAACGATAAAGGACTTCCTGAACTACA	300
GCCCCGAGCTCTACACGAGAAAGTACGTGATAGTCCACGACTGTGAAAGA	
ATGACCCAGCAGGCGGCGAACGCGTTTCTGAAGGCCCTTGAAGAACCACC	400
AGAATACGCTGTGATCGTTCTGAACACTCGCCGCTGGCATTATCTACTGC	
CGACGATAAAGAGCCGAGTGTTTCTGAGTGGTTGTGAACGTTCCAAAGGAG	500
TTCAGAGATCTCGTGAAAGAGAAAATAGGAGATCTCTGGGAGGAACTTCC	
ACTTCTTGAGAGAGACTTCAAAACGGCTCTCGAAGCCTACAAACTTGGTG	600
CGGAAAAACTTTCTGGATTGATGGAAAGTCTCAAAGTTTTTGAGACGGAA	
AAACTCTTGAAAAAGGTCTTTTCAAAGGCCTCGAAGGTTATCTCGCATG	700
TAGGGAGCTCCTGGAGAGATTTTCAAAGGTGGAATCGAAGGAATTCTTTG	
CGCTTTTGTGATCAGGTGACTAACACGATAACAGGAAAAGACGCGTTTCTT	800
TTGATCCAGAGACTGACAAGAATCATTCTCCACGAAAACACATGGGAAAG	
CGTTGAAGATCAAAAAAGCGTGTCTTTCCTCGATTCAATTCTCAGGGTGA	900
AGATAGCGAATCTGAACAACAACTCACTCTGATGAACATCCTCGCGATA	
CACAGAGAGAGAAAGAGAGGTGTCAACGCTTGGAGC	

FIG. 64

MNDLIRKYAKDQLETLKRIIEKSEGISILINGEDLSYPREVSLELPEYVE	100
KFPKASDVLEIDPEGENIGIDDIRTIKDFLNYSPELYTRKYVIVHDCER	
MTQQAANAFLKALEEPPEYAVIVLNTRRWYLLPTIKSRVFRVVVNPKE	200
FRDLVKEKIGDLWEELPLLERDFKTALEYKLGAEKLSGLMESLKVLETE	
KLLKKVLSKGLEGYLACRELLERFSKVESKEFFALFDQVTNTITGKDAFL	300
LIQRLTRIILHENTWESVEDKSVSFLDSILRVKIANLNNKLTLMNILAIH	
RERKRGVNAWS	

FIG. 65

ATGTCCTTCTTCAACAAGATCATACTCATAGGAAGACTCGTGAGAGATCC
 CGAAGAGAGATACACGCTCAGCGGAACTCCAGTCACCACCTTCACCATAG 100
 CGGTGGACAGGGTTCCCAGAAAGAACGCGCCGGACGACGCTCAAACGACT
 GATTTCTTCAGGATCGTCACCTTTGGAAGACTGGCAGAGTTCGCTAGAAC 200
 CTATCTCACCAAAGGAAGGCTCGTTCTCGTCGAAGGTGAAATGAGAATGA
 GAAGATGGGAAACACCCACTGGAGAAAAGAGGGTATCTCCGGAGGTTGTC 300
 GCAAACGTTGTTAGATTTCATGGACAGAAAACCTGCTGAAACAGTTAGCGA
 GACTGAAGAGGAGCTGGAAATACCGGAAGAAGACTTTTCCAGCGATACCT 400
 TCAGTGAAGATGAACCACCATTT

FIG. 66

MSFFNKIILIGRLVRDPEERYTLSGTPVTTFTIAVDRVPRKNAPDDAQT
 DFFRIVTFGRLAEFARTYLTGRLVLVEGEMRMRRWETPTGEKRVSPVV 100
 ANVVRFMDRKPAETVSETEEELEIPEEDFSSDTFSEDEPPF

FIG. 67

ATGCGTGTTCCTCCCGCACAACTTAGAGGCCGAAGTTGCTGTGCTCGGAAG	100
CATATTGATAGATCCGTCGGTAATAAACGACGTTCTTGAAATTTTGAGCC	
ACGAAGATTTCTATCTGAAAAAACACCAACACATCTTCAGAGCGATGGAA	200
GAGCTTTACGACGAAGGAAAACCGGTGGACGTGGTTTCCGTCTGTGACAA	
GCTTCAAAGCATGGGAAAACCTCGAGGAAGTAGGTGGAGATCTGGAAGTGG	300
CCCAGCTCGCTGAGGCTGTGCCAGTTCTGCACACGCACTTCACTACGCG	
GAGATCGTCAAGGAAAAATCCATTCTGAGGAAACTCATTGAGATCTCCAG	400
AAAAATCTCAGAAAGTGCCTACATGGAAGAAGATGTGGAGATCCTGCTCG	
ACAACGCAGAAAAGATGATCTTCGAGATCTCAGAGATGAAAACGACAAA	500
TCCTACGATCATCTGAGAGGCATCATGCACCGGGTGTGTTGAAAACCTGGA	
GAACTTCAGGGAAAGAGCCAACCTTATAGAACCCGGTGTGCTCATAACGG	600
GACTACCAACGGGATTCAAAAGTCTGGACAAACAGACCACAGGGTTCCAC	
AGCTCCGATCTGGTGATAATAGCAGCGAGACCCTCCATGGGAAAAACCTC	700
CTTCGCACTCTCAATAGCGAGGAACATGGCTGTCAATTTCGAAATCCCCG	
TCGGAATATTCAGTCTCGAGATGTCCAAGGAACAGCTCGCTCAAAGACTA	800
CTCAGCATGGAGTCCGGTGTGGATCTTTACAGCATCAGAACAGGATACCT	
GGATCAGGAGAAGTGGGAAAGACTCACAATAGCGGCTTCTAAACTCTACA	900
AAGCACCCTAGTTGTGGACGATGAGTCACTCCTCGATCCGCGATCGTTG	
AGGGCAAAAGCGAGAAGGATGAAAAAGAATACGATGTAAAAGCCATTTT	1000
TGTCGACTATCTCCAGCTCATGCACCTGAAAGGAAGAAAAGAAAGCAGAC	
AGCAGGAGATATCCGAGATCTCGAGATCTCTGAAGCTCCTTGCGAGGGAA	1100
CTCGACATAGTGGTGATAGCGCTTTACAGCTTTTCGAGGGCCGTAGAACA	
GAGAGAAGACAAAAGACCGAGGCTGAGTGACCTCAGGGAATCCGGTGCGA	1200
TAGAACAGGACGCAGACACAGTCATCTTCATCTACAGGGAGGAATATTAC	
AGGAGCAAAAAATCCAAGAGGAAAGCAAGCTTCACGAACCTCACGAAGC	1300
TGAAATCATAATAGGTAAACAGAGAAACGGTCCCGTTGGAACGATCACTC	
TGATCTTCGACCCAGAACGGTTACGTTCCATGAAGTCGATGTGGTGCAT	1353
TCA	

FIG. 68

MRVPPHNLEAEVAVLGSILIDPSVINDVLEILSHEDFYLLKKHQHIFRAME	100
ELYDEGKPDVSVCDKLQSMGKLEEVGGDLEVAQLAEAVPSSAHALHYA	
EIVKEKSILRKLEISRKISESAYMEEDVEILLDNAEKMIFEISEMKTTK	200
SYDHLRGIMHRVFENLENFRERANLIEPGVLITGLPTGFKSLDKQTTGFH	
SSDLVIIAARPSMGKTSFALSIARNMAVNFEIPVGIFSLEMSKEQLAQL	300
LSMESGVDLYSIRTGYLDQEKWERLTIAASKLYKAPIVVDDESLLDPRSL	
RAKARRMKKEYDVKAIFVDYLQMLHLKGRKESRQOEISEISRLKLLARE	400
LDIVVIALSQLSRAVEQREDKRPRLSDLRESGAIEQDADTVIFIYREEYY	
RSKKSKEESKLHEPHEAEIIIGKQRNGPVGTTITLIFDPRTVTFHEVDVH	451
S	

FIG. 69

GTGATTCCTCGAGAGGTCATCGAGGAAATAAAAGAAAAGGTTGACATCGT	
AGAGGTCATTTCCGAGTACGTGAATCTTACCCGGGTAGGTTCTCCTACA	100
GGGCTCTCTGTCCCTTTTCATTTCAGAAACCAATCCTTCTTTCTACGTTTCAT	
CCGGGTTTGAAGATATACCATTGTTTCGGCTGCGGTGCGAGTGGAGACGT	200
CATCAAATTTCTTCAAGAAATGGAAGGGATCAGTTTCCAGGAAGCGCTGG	
AAAGACTTGCCAAAAGAGCTGGGATTGATCTTTCTCTCTACAGAACAGAA	300
GGGACTTCTGAATACGGAAAATACATTTCGTTTGTACGAAGAAACGTGGAA	
AAGGTACGTCAAAGAGCTGGAGAAATCGAAAGAGGCAAAAGACTATTTAA	400
AAAGCAGAGGGCTTCTCTGAAGAAGATATAGCAAAGTTCGGCTTTGGGTAC	
GTCCCCAAGAGATCCAGCATCTCTATAGAAGTTGCAGAAGGCATGAACAT	500
AACACTGGAAGAACTTGTCAGATACGGTATCGCGCTGAAAAAGGGTGATC	
GATTCGTTGATAGATTTCGAAGGAAGAATCGTTGTTCCAATAAAGAACGAC	600
AGTGGTCATATTGTGGCTTTTGGTGGGCGTGCTCTCGGCAACGAAGAACC	
GAAGTATTTGAACTCTCCAGAGACCAGGTATTTTTTCGAAGAAGAAGACCC	700
TTTTTCTCTTCGATGAGGCGAAAAAAGTGGCAAAAGAGGTTGGTTTTTTC	
GTCATCACCGAAGGCTACTTCGACGCGCTCGCATTTCAGAAAGGATGGAAT	800
ACCAACGGCGGTGCTGTTCTTGGGGCGAGTCTTTCAAGAGAGGCGATTCT	
TAAAACTTTTCGGCGTATTTCGAAAAACGTCACTACTGTGTTTCGATAATGAC	900
AAAGCAGGCTTCAGAGCCACTCTCAAATCCCTCGAGGATCTCCTAGACTA	
CGAATTCAACGTGCTTGTGGCAACCCCTCTCCTTACAAAGACCCAGATG	1000
AACTCTTTCAGAAAGAAGGAGAAGGTTTCATTGAAAAAGATGCTGAAAAAC	
TCGCGTTTCGTTTCAATATTTTCTGGTGACGGCTGGTGAGGTCTTCTTTGA	1100
CAGGAACAGCCCCGCGGTGTGAGATCCTACCTTTCTTTCCTCAAAGGTT	
GGGTCCAAAAGATGAGAAGGAAAGGATATTTGAAACACATAGAAAATCTC	1200
GTGAATGAGGTTTCATCTTCTCTCCAGATACCAGAAAACCAGATTTTGAA	
CTTTTTTTGAAAGCGACAGGTCTAACACTATGCCTGTTTCATGAGACCAAGT	1300
CGTCAAAGGTTTACGATGAGGGGAGAGGACTGGCTTATTTGTTTTTGAAC	
TACGAGGATTTGAGGGAAAAGATTCTGGAACCTGGACTTAGAGGTACTGGA	1400
AGATAAAAACGCGAGGGAGTTTTTCAAGAGAGTCTCACTGGGAGAAGATT	
TGAACAAAGTCATAGAAAACCTCCCAAAGAGCTGAAAGACTGGATTTTTT	1500
GAGACAATAGAAAGCATTCTCTCCTCCAAAGGATCCCGAGAAATTCTCTCGG	
TGACCTCTCCGAAAAGTTGAAAATCCGACGGATAGAGAGACGTATCGCAG	1600
AAATAGATGATATGATAAAGAAAGCTTCAAACGATGAAGAAAGGCGTCTT	
CTTCTCTCTATGAAAGTGGATCTCCTCAGAAAAATAAAGAGGAGG	1695

FIG. 70

MIPREVIEEIKEKVDIVEVISEYVNLTRVGSSYRALCPFHSETNPSFYVH	
PGLKIYHCFGCGASGDVIKFLQEMEGISFQEALERLAKRAGIDLSLYRTE	100
GTSEYGKYIRLYEETWKRYVKELEKSKEAKDYLKSRGFSEEDIAKFGFGY	
VPKRSSISIEVAEGMNITLEELVRYGIALKKGDRFVDRFEGRIVVPIKND	200
SGHIVAFGGRALGNEEPKYLNSPETRYFSKKKTLFLFDEAKKVAKEVGFF	
VITEGYFDALAFRKDGIPTAVAVLGASLSREAILKLSAYSKNVILCFDND	300
KAGFRATLKSLEDLLDYEFNVLVATPSPYKDPDELFOKEGEGSLKKMLKN	
SRSFEYFLVTAGEVFFDRNSPAGVRSYLSFLKGWVQKMRRKGYLKHIENL	400
VNEVSSSLQIPENQILNFFESDRSNTMPVHETKSSKVYDEGRGLAYLFLN	
YEDLREKILELDLEVLEDKNAREFFKRVSLGEDLNKVIENFPKELKDWIF	500
ETIESIPPPKDPEKFLGDLSEKLKIRRIERRIAEIDDMIKKASNDEERRL	
LLSMKVDLLRKIKRR	565

FIG. 71

ATGGCTCTACACCCGGCTCACCTGGGGCAATAATCGGGCACGAGGCCGT	
TCTCGCCCTCCTTCCCCGCCTCACCGCCAGACCCTGCTCTTCTCCGGCC	100
CCGAGGGGGTGGGGCGGCGCACCGTGGCCCGCTGGTACGCCTGGGGGCTC	
AACCGCGGCTTCCCCCGCCCTCCCTGGGGGAGCACCCGGACGTCCTCGA	200
GGTGGGGCCCAAGGCCCGGGACCTCCGGGGCGGGCCGAGGTGCGGCTGG	
AGGAGGTGGCGCCCTCCTGGAGTGGTGCTCCAGCCACCCCCGGGAGCGG	300
GTGAAGGTGGCCATCCTGGACTCGGCCACCTCCTCACCGAGGCCGCCGC	
CAACGCCCTCCTCAAGCTCCTGGAGGAGCCCCCTTCTACGCCCGCATCG	400
TCCTCATCGCCCCAAGCCGCGCCACCCTCCTCCCCACCCTGGCCTCCCGG	
GCCACGGAGGTGGCATTCGCCCCCGTGCCCGAGGAGGCCCTGCGCGCCCT	500
CACCCAGGACCCGGAGCTCCTCCGCTACGCCCGCGGGGCCCGGGCCGCC	
TCCTTAGGGCCCTCCAGGACCCGGAGGGGTACCGGGCCCGCATGGCCAGG	600
GCGCAAAGGGTCTGAAAGCCCCGCCCTGGAGCGCCTCGCTTTGCTTCG	
GGAGCTTTTGGCCGAGGAGGAGGGGGTCCACGCCCTCCACGCCGTCTTAA	700
AGCGCCCGGAGCACCTCCTTGCCCTGGAGCGGGCGCGGGAGGCCCTGGAG	
GGGTACGTGAGCCCCGAGCTGGTCCTCGCCCGGCTGGCCTTAGACTTAGA	800
GACA	

FIG. 72

MALHPAHPGAIIGHEAVLALLPRLTAQTLLFSGPEGVGRRTVARWYAWGL	
NRGFPPPSLGEHPDVLEVGPKARDLRGRAEVRLEEVAPLLEWCSSHPRER	100
VKVAILDSAHLLTEAAANALLKLLEPPSYARIVLIAPSRATLLPTLASR	
ATEVAFAPVPEEALRALTQDPELLRYAAGAPGRLLRALQDPEGYRARMAR	200
AQRVLKAPPLERLALLRELLAEEEGVHALHAVLKRPEHLLALERAREALE	
GYVSPELVLARLALDLET	268

FIG. 73

ATGCTGGACCTGAGGGAGGTGGGGGAGGCGGAGTGGAAGGCCCTAAAGCC 100
 CCTTTTGGAAAGCGTGCCCGAGGGCGTCCCCGTCTCCTCCTGGACCTA
 AGCCAAGCCCCCTCCCGGGCGGCCTTCTACCGGAACCGGGAAGGCGGGAC 200
 TTCCCCACCCCCAAGGGGAAGGACCTGGTGCGGCACCTGGAAAACCGGC
 CAAGCGCCTGGGGCTCAGGCTCCCGGGCGGGGTGGCCAGTACCTGGCCT
 CCCTGGAGGGGGACCTCGAGGCCCTGGAGCGGGAGCTGGAGAAGCTTGCC 300
 CTCCTCTCCCCACCCCTCACCCCTGGAGAAGGTGGAGAAGGTGGTGGCCCT
 GAGGCCCCCCTCACGGGCTTTGACCTGGTGCGCTCCGTCTGGAGAAGG 400
 ACCCAAGGAGGCCCTCCTGCGCCTAGGCGGCCTCAAGGAGGAGGGGAG
 GAGCCCCCTCAGGCTCCTCGGGGCCCTCTCCTGGCAGTTTCGCCCTCCTCGC 500
 CCGGGCCTTCTTCCTCCTCCGGGAAAACCCCAAGGAGGAGGACC
 TCGCCCCGCTCGAGGCCACCCCTACGCCGCCCGCCGCGCCCTGGAGGCG 600
 GCGAAGCGCCTCACGGAAGAGGCCCTCAAGGAGGCCCTGGACGCCCTCAT
 GGAGGCGGAAAAGAGGGCCAAGGGGGGAAAGACCCGTGGCTCGCCCTGG 700
 AGGCGGCGGTCTCCGCCTCGCCCGTTGA

FIG. 74

MVIAFTGDPFLAREALLEEARLRGLSRFTEPTPEALAQALAPGLFGGGGA 100
 MLDLREVGEAEWKALKPLLESVPEGVPVLLLDPKPSPSRAAFYRNRRRD
 FPTPKGKDLVRHLENRAKRLGLRLPGGVAQYLASLEGDLEALERELEKLA 200
 LLSPLTLEKVEKVVALRPPLTGFDLVRVLEKDPKEALLRLGGLKEEGE
 EPLRLLGALSWQFALLARAFLLRENPRPKEEDLARLEAHPYAARRALEA 292
 AKRLTEEALKEALDALMEAEKRAKGKDPWLALEAAVLRLAR

FIG. 75

AATTCCGACATTTCAATTGAATCGTTTATTCCGCTTGAAAAAGAAGGCAA	100
GTTGCTCGTTGATGTGAAAAGACCGGGGAGCATCGTACTGCAGGCGCGCT	
TTTTCTCTGAAATCGTGAAAAAACTGCCGCAACAAACGGTGGAATCGAA	200
ACGGAAGACAACTTTTTGACGATCATCCGCTCGGGGCACTCAGAATTCCG	
CCTCAATGGGCTAAACGCCGACGAATATCCGCGCCTGCCGCAAATTGAAG	300
AAGAAAACGTGTTTCAAATCCCGGCTGATTTATTGAAAACCGTGATTTCGG	
CAAACGGTGTTTCGCCGTTTCTACATCGGAAACGCGCCCAATCTTGACAGG	400
TGTCAACTGGAAAGTTGAACATGGCGAGCTTGTCTGCACAGCGACCGACA	
GTCATCGCTTAGCCATGCGCAAAGTGAAAATTGAGTCGGAAAATGAAGTA	500
TCATACAACGTCGTCATCCCTGGAAAAAGTCTTAATGAGCTCAGCAAAT	
TTTGATGACGGCAACCACCCGGTGGACATCGTCATGACAGCCAATCAAG	600
TGCTATTTAAGGCCGAGCACCTTCTCTTCTTTTCCCGGCTGCTTGACGGC	
AACTATCCGGAGACGGCCCGCTTGATTCCAACAGAAAGCAAAACGACCAT	700
GATCGTCAATGCAAAAGAGTTTCTGCAGGCAATCGACCGAGCGTCCTTGC	
TTGCTCGAGAAGGAAGGAACAACGTTGTGAAACTGACGACGCTTCCTGGA	800
GGAATGCTCGAAATTTCTTCGATTTCTCCGAGATCGGGAAAGTGACGGAG	
CAGCTGCAAACGGAGTCTCTTGAAGGGGAAGAGTTGAACATTTCTGTTT	900
CGCGAAATATATGATGGACGCGTTGCCGGCGCTTGATGGAACAGACATTT	
CAAATCAGCTTCACTGGGGCCATGCGGCCGTTTCTGTTGCGCCCGCTTCA	992
ACCGATTGATGCTTCAGCTCATTTTGCCGGTGAGAACATAT	

FIG. 78

NSDISIIIESFIPLEKEGKLLVDVKRPGSIVLQARFFSEIVKKLPQQTVEI	100
ETEDNFLTIIRSGHSEFRLNGLNADEYPRLPQIEEENVFQIPADLLKTVI	
RQTVFAVSTSETRPILTGWNKVEHGELVCTATDSHRLAMRKVKII ESEN	200
EVSYNVVIPGKSLNELSKIILDDGNHPVDIVMTANQVLFKAHLLFFSRL	
LDGNYPETARLIPTESKTTMIVNAKEFLQAI DRASLLAREGRNNVVKLTT	300
LPGGMLEISSISPEIGKVTEQLQTESLEGEELNISFS AKYMMDALRALDG	
TDIQISFTGAMRPFLLRPLHTDSMLQLILPVRTY	

FIG. 79

ATGATTAACCGCGTCATTTTGGTCGGCAGGTTAACGAGAGATCCGGAGTT
 GCGTTACACTCCAAGCGGAGTGGCTGTTGCCACGTTTACGCTCGCGGTCA 100
 ACCGTCCGTTTACAAATCAGCAGGGCGAGCGGGAACGGATTTTATTCAA
 TGTGTCGTTTGGCGCCGCCAGGCGGAAAACGTCGCCAACTTTTTGAAAA 200
 GGGGAGCTTGGCTGGTGTGATGGCCGACTGCAAACCCGCAGCTATGAAA
 ATCAAGAAGGTCGGCGTGTGTACGTGACGGAAGTGGTGGCTGATAGCGTC 300
 CAATTTCTTGAGCCGAAAGGAACGAGCGAGCAGCGAGGGGCGACAGCAGG
 CGGCTACTATGGGGATCCATTCCCATTCGGGCAAGATCAGAACCACCAAT 400
 ATCCGAACGAAAAAGGGTTTGGCCGCATCGATGACGATCCTTTCGCCAAT
 GACGGCCAGCCGATCGATATTTCTGATGATGATTGCGCGTTT 492

FIG. 80

MINRVILVGRLTRDPELRYTPSGVAVATFTLAVNRPFTNQSYENQEGRRV
 YVTEVVADSVQFLEPKGTSERQATAGGYQGERETDFIQCVVWRRQAEN 100
 VANFLKKGSLAGVDGRLQTRGDPFPFGQDQNHQYPNEKGFGRIDDDPFAN
 DGQPIDISDDDLPF 164

FIG. 81

ATGCTGGAACGCGTATGGGGAAACATTGAAAAACGGCGTTTTTCTCCCCT	
TTATTTATTATACGGCAATGAGCCGTTTTTATTAAACGGAAACGTATGAGC	100
GATTGGTGAACGCAGCGCTTGGCCCCGAGGAGCGGGAGTGGAACCTGGCT	
GTGTACGACTGCGAGGAAACGCCGATCGAGGCGGCGCTTGAGGAGGCCGA	200
GACGGTGCCGTTTTTTCGGCGAGCGGCGTGTCAATTCTCATCAAGCATCCAT	
ATTTTTTTTACGTCTGAAAAAGAGAAGGAGATCGAACATGATTTGGCGAAG	300
CTGGAGGCGTACTTGAAGGCGCCGTCGCCGTTTTTCGATCGTCGTCTTTTT	
CGCGCCGTACGAGAAGCTTGATGAGCGAAAAAAATTACGAAGCTCGCCA	400
AAGAGCAAAGCGAAGTCGTCATCGCCGCCCCGCTCGCCGAAGCGGAGCTG	
CGTGCCCTGGGTGCGGCGCCGCATCGAGAGCCAAGGGGCGCAAGCAAGCGA	500
CGAGGCGATTGATGTCCTGTTGCGGCGGGCGGGACGCAGCTTTCGCCT	
TGGCGAATGAAATCGATAAATTGGCCCTGTTTGCCGGATCGGGCGGAACC	600
ATCGAGGCGGCGGCGGTTGAGCGGCTTGTGCCCGCACGCCGGAAGAAAA	
CGTATTTGTGCTTGTTCGAGCAAGTGGCGAAGCGCGACATTCCAGCAGCGT	700
TGCAGACGTTTTATGATCTGCTTGAAACAATGAAGAGCCGATCAAATT	
TTGGCGTTGCTCGCCGCCCATTTCCGCTTGCTTTTCGCAAGTGAAATGGCT	800
TGCCTCCTTAGGCTACGGACAGGCGCAAATTGCTGCGGCGCTCAAGGTGC	
ACCCGTTCCGCGTCAAGCTCGCTCTTGCTCAAGCGGCCCGCTTCGCTGAC	900
GGAGAGCTTGCTGAGGCGATCAACGAGCTCGCTGACGCCGATTACGAAGT	
GAAAAGCGGGGCGGTGATCGCCGTTGGCCGTTGAGCTGCTTCTGATGC	1000
GCTGGGGCGCCCCGCCCGCGCAAGCGGGGCGCCACGGCCGGCGG	

FIG. 82

MLERVWGNIEKRRFSPLYLLYGNPFLLTETYERLVNAALGPEEREWNLA	
VYDCEETPIEAALAEAETVPFFGERRVILIKHPYFFTSEKEKEIEHDLAK	100
LEAYLKAPSPFSIVVFFAPYEKLDERRKITKLAKSEQSEVVIAAPLAEEL	
RAWVRRRIESQGAQASDEAIDVLLRRAGTQLSALANEIDKLALFAGSGGT	200
IEAAVERLVARTPEENVFVLVEQVAKRDIPAAALQTFYDLLENNEEPIKI	
LALLAAHFRLLSQVKWLASLGYGQAQIAAALKVHPFRVKLALAQAAFAD	300
GELAEAINELADADYEVKSGAVDRRLAVELLMRWGARPAQAGRHGR	

FIG. 83

ATGCGATGGGAACAGCTAGCGAAACGCCAGCCGGTGGTGGCGAAAATGCT 100
 GCAAAGCGGCTTGGA AAAAGGGCGGATTTCTCATGCGTACTTGTTTGAGG
 GGCAGCGGGGACGGGCAAAAAGCGGCCAGTTTGTTGTTGGCGAAACGT 200
 TTGTTTTGTCTGTCCCCAATCGGAGTTTCCCCGTGTCTAGAGTGCCGCA
 CTGCCGGCGCATCGACTCCGGCAACCACCCTGACGTCCGGGTGATCGGCC 300
 CAGATGGAGGATCAATCAAAAAGGAACAAATCGAATGGCTGCAGCAAGAG
 TTCTCGAAAACAGCGGTCGAGTCGGATAAAAAAATGTACATCGTTGAGCA 400
 CGCCGATCAAATGACGACAAGCGCTGCCAACAGCCTTCTGAAATTTTGG
 AAGAGCCGCATCCGGGGACGGTGGCGGTATTGCTGACTGAGCAATACCAC 500
 CGCCTGTAGGGACGATCGTTTCCCGCTGTCAAGTGCTTTCGTTCCGGCC
 GTTGCCCGCCGGCAGAGCTCGCC CAGGACTTGTGAGGAGCACGTGCCGT 600
 TGCCGTTGGCGCTGTTGGCTGCCCATTGACAAACAGCTTCGAGGAAGCA
 CTGGCGCTTGCCAAAGATAGTTGGTTTGCCGAGGCGCGAACATTAGTGCT 700
 ACAATGGTATGAGATGCTGGGCAAGCCGAGCTGCAGCTTTTGT TTTTCA
 TCCACGACCGCTTGTTTCCGCATTTTTTGGAAGCCATCAGCTTGACCTT 757
 GGACTTG

FIG. 84

MRWEQLAKRQPVVAKMLQSGLEKGRISHAYLFEGQRGTGKKAASLLAKR 100
 LFCLSPIGVSPCLECRNCRRIDSGNHPDVRVIGPDGGS IKKEQIEWLQQE
 FSKTAVESDKMYIVEHADQMTTSAANSLLKFLEEPHPGTVAVLLTEQYH 200
 RLLGTIVSRCQVLSFRPLPPAELAQGLVEEHVPLPLALLAHLTNSFEEA
 LALAKDSWFAEARTLVLQWYEMLGKPELQLLFFIHDRLPHPFLESHQLDL 252
 GL

FIG. 85

GTGGCATACCAAGCGTTATATCGCGTGTTTCGGCCGCAGCGCTTTGCGGA	
CATGGTTCGGCCAAGAACACGTGACCAAGACGTTGCAAAGCGCCCTGCTTC	100
AACATAAAATATCGCACGCTTACTTATTTTCCGGCCCGCGGGTACAGGA	
AAAACGAGCGCAGCGAAAATTTTCGCCAAGGCGGTCAACTGTGAACAGGC	200
GCCAGCGGGCGGAGCCATGCAATGAGTGTCCAGCTTGCCTCGGCATTACGA	
ATGGAACGGTTCCCGATGTGCTGGAATTTGACGCTGCTTCCAACAACCGC	300
GTCGATGAAATTCGTGATATCCGTGAGAAGGTGAAATTTGCGCCAACGTC	
GGCCCGCTACAAAGTGTATATCATCGACGAGGTGCATATGCTGTCGATCG	400
GTGCGTTTAACGCGCTGTTGAAAACGTTGGAGGAGCCGCCGAAACACGTC	
ATTTTCATTTTGGCCACGACCCGAGCCGCACAAAATTCCGGCGACGATCAT	500
TTCCCGCTGCCAACGGTTCGATTTTCGCCGCATCCCGCTTCAGGCGATCG	
TTTCACGGCTAAAGTACGTGCAAGCGCCCAAGGTGTGAGGCGTCAGAT	600
GAGGCATTGTCCGCCATCGCCCGTGCTGCAGACGGGGGGATGCGCGATGC	
GCTCAGCTTGCTTGATCAAGCCATTTGCTTCAGCGACGGGAAACTTCGGC	700
TCGACGACGTGCTGGCGATGACCGGGGCTGCATCATTTGCCGCCTTATCG	
AGCTTCATCGAAGCCATCCACCGCAAAGATACAGCGGCGGTTCTTCAGCA	800
CTTGGAACGATGATGGCGCAAGGGAAAGATCCGCATCGTTTGGTTGAAG	
ACTTGATTTTGTACTATCGCGATTTATTGCTGTACAAAACCGCTCCCTAT	900
GTGGAGGGAGCGATTCAAATTGCTGTGCTTGACGAAGCGTTCACTTCACT	
GTCGGAAATGATTCCGGTTTCCAATTTATACGAGGCCATCGAGTTGCTGA	1000
ACAAAAGCCAGCAAGAGATGAAGTGGACAAACCACCCGCGCCTTCTGTTG	
GAAGTGGCGCTTGTGAAACTTTGCCATCCATCAGCCGCCGCCCGTGGCT	1100
GTCGGCTTCCGAGTTGGAACCGTTGATAAAGCGGATTGAAACGCTGGAGG	
CGGAATTGCGGCGCCTGAAGGAACAACCGCCTGCCCTCCGTGACCGCC	1200
GCGCCGTTGAAAAAAGTGTCCAAACCGATGAAAACGGGGGGATATAAAGC	
CCCGGTTGGCCGCATTTACGAGCTGTTGAAACAGGCGACGCATGAAGATT	1300
TAGCTTTGGTGAAAGGATGCTGGGCGGATGTGCTCGACACGTTGAAACGG	
CAGCATAAAGTGTGCGACGCTGCCTTGCTGCAAGAGAGCGAGCCGGTTGC	1400
AGCGAGCGCCTCAGCGTTTGTATTAAATTTCAAATACGAAATCCACTGCA	
AAATGGCGACCGATCCACAAGTTCCGGTCAAAGAAAACGTGGAAGCGATT	1500
TTGTTTGAGCTGACAAACCGCCGCTTTGAAATGGTAGCCATTCCGGAGGG	
AGAATGGGGAAAAATAAGAGAAGAGTTTATCCGCAATAAGGACGCCATGG	1600
TGGAAAAAAGCGAAGAAGATCCGTTAATCGCCGAAGCGAAGCGGCTGTTT	
GGCGAAGAGCTGATCGAAATTAAAGAA	1677

FIG. 86

VAYQALYRVFRPQRFADMVGQEHVTKTLQSALLQHKISHAYLFSGPRGTG
 KTSAAKIFAKAVNCEQAPAAEPCNECPACLGITNGTVPDVLEIDAASNNR 100
 VDEIRDIREKVKFAPTSARYKVYIIDEVHMLSIGAFNALLKTLLEPPKHV
 IFILATTEPHKIPATIIISRCQRFDFRRIPLQAIVSRLKYVASAQGVEASD 200
 EALSAIARAADGGMRDALSLDQAI SFSDGKLRLDDVLAMTGAASFAALS
 SFIEAIHRKDTAAVLQHLETMMAGKDPHRLVEDLILYYRDL LLYKTAPY 300
 VEGAIQIAVVDEAFTSLSEMI PVSNLYEAI ELLNKSQQEMKWTNHPRLLL
 EVALVKLCHPSAAAPSL SASELEPLIKRIETLEAELRRLKEQPPAPPSTA 400
 APVKKLSKPMKTGGYKAPVGRIYELLKQATHEDLALVKGCWADVLDTLKR
 QHKVSHAALLQESEPVAASASAFVLKFKYEIHCKMATDPTSSVKENVEAI 500
 LFELTNRRFEMVAIPEGEWGKIREEFIRNKDAMVEKSEEDPLIAEAKRLF
 GEELIEIKE 559

FIG. 87

ATGGTGACAAAAGAGCAAAAAGAGCGGTTTCTCATCCTGCTTGAGCAGCT	
GAAGATGACGTCGGACGAATGGATGCCGCATTTTCGTGAGGCAGCCATTC	100
GCAAAGTCGTGATCGATAAAGAGGAGAAAAGCTGGCATTTTTATTTTCAG	
TTCGACAACGTGCTGCCGGTTCATGTATACAAAACGTTTGCCGATCGGCT	200
GCAGACGGCGTTCCGCCATATCGCCGCCGTCCGCCATACGATGGAGGTCG	
AAGCGCCGCGCGTAACTGAGGCGGATGTGCAGGCGTATTGGCCGCTTTGC	300
CTTGCCGAGCTGCAAGAAGGCATGTGCGCGCTTGTCGATTGGCTCAGCCG	
GCAGACGCCTGAGCTGAAAGGAAACAAGCTGCTTGTCGTTGCCCGCCATG	400
AAGCGGAAGCGCTGGCGATCAAACGGCGGTTCCGCCAAAAAATCGCTGAT	
GTGTACGCTTCGTTTGGGTTTCCCCCCTTCAGCTTGACGTCAGCGTCGA	500
GCCGTCCAAGCAAGAAATGGAACAGTTTTTGGCGCAAAAACAGCAAGAGG	
ACGAAGAGCGAGCGCTTGCTGTACTGACCGATTTAGCGAGGGAAGAAGAA	600
AAGGCCGCGTCTGCGCCGCCGTCCGGTCCGCTTGTCATCGGCTATCCGAT	
CCGCGACGAGGAGCCGGTGCGGCGGCTTGAAACGATCGTCGAAGAAGAGC	700
GGCGCGTCGTTGTGCAAGGCTATGTATTTGACGCCGAAGTGAGCGAATTA	
AAAAGCGGCCGCACGCTGTTGACCATGAAAATCACAGATTACACGAACTC	800
GATTTTAGTCAAAATGTTCTCGCGCGACAAAGAGGACGCCGAGCTTATGA	
GCGGCGTCAAAAAGGCATGTGGGTGAAAGTGCGCGGCAGCGTGCAAAAC	900
GATACGTTTCGTCCGTGATTTGGTCATCATCGCCAACGATTTGAACGAAAT	
CGCCGCAAACGAACGGCAAGATACGGCGCCGGAAGGGGAAAAGAGGGTCG	1000
AGCTCCATTTGCATACCCCGATGAGCCAAATGGACGCGGTACCTCGGTG	
ACAAAACTCATTGAGCAAGCGAAAAAATGGGGGCATCCGGCGATCGCCGT	1100
CACCGACCATGCCGTTGTTTCAGTCGTTTCCGGAGGCCTACAGCGCGGCGA	
AAAAACACGGCATGAAGGTCATTTACGGCCTTGAGGCGAACATCGTCGAC	1200
GATGGCGTGCCGATCGCCTACAATGAGACGCACCGCCGTCTTTTCGGAGGA	
AACGTACGTCGTCTTTGACGTCGAGACGACGGGCCTGTGGCTGTGTACA	1300
ATACGATCATTGAGCTGGCGGCGGTGAAAGTGAAAGACGGCGAGATCATC	
GACCGATTTCATGTCGTTTGCCAACCCTGGACATCCGTTGTCGGTGACAAC	1400
GATGGAGCTGACTGGGATCACCGATGAGATGGTGAAAGACGCCCCGAAGC	
CGGACGAGGTGCTAGCCCGTTTTGTTGACTGGGCCGGCGATGCGACGCTT	1500
GTTGCCCAACAGCCAGCTTTGACATCGGTTTTTTTAAACGCGGGCCTCGC	
TCGCATGGGGCGCGGCAAAATCGCGAATCCAGTCATCGATACGCTCGAGC	1600
TGGCCCGTTTTTTTATACCCGGATTTGAAAAACCATCGGCTCAATACATTG	
TGCAAAAAATTTGACATTGAATTGACGCAGCATCACCGCGCCATCTACGA	1700
CGCGGAGGCGACCGGGCATTGCTTATGCGGCTGTTGAAGGAAGCGGAAG	
AGCGCGGCATACTGTTTCATGACGAATTAACAGCCGCACGCACAGCGAA	1800
GCGTCCATATGGCTTGCGCGCCCGTTCCATGTGACGCTGTTGGCGCAAAA	
CGAGACTGGATTGAAAAATTTGTTCAAGCTTGTTGTCATTGTCGCACATTC	1900
AATATTTTACCGTGTGCCGCGCATCCCGCGCTCCGTGCTCGTCAAGCAC	
CGCGACGGCCTGCTTGTCGGCTCGGGCTGCGACAAAGGAGAGCTGTTTGA	2000
CAACTTGATCCAAAAGGCGCCGGAAGAAGTCGAAGACATCGCCCGTTTTT	
ACGATTTTCTTGAAGTGCATCCGCCGACGTGTACAAGCCGCTCATCGAG	2100
ATGGATTATGTGAAAGACGAAGAGATGATCAAAAACATCATCCGCAGCAT	
CGTCGCCCTTGGTGAGAAGCTTGACATCCCGGTTGTCGCCACTGGCAACG	2200

FIG. 88A

TCCATTACTTGAACCCAGAAGATAAAATTTACCGGAAAATCTTAATCCAT
 TCGCAAGGCGGGGCGAATCCGCTCAACCGCCATGAACTGCCGGATGTATA 2300
 TTTCCGTACGACGAATGAAATGCTTGACTGCTTCTCGTTTTTAGGGCCGG
 AAAAAGCGAAGGAAATCGTCGTTGACAACACGCAAAAAATCGCTTCGTTA 2400
 ATCGGCGATGTCAAGCCGATCAAAGATGAGCTGTATACGCCGCGCATTGA
 AGGGGCGGACGAGGAAATCAGGGAAATGAGCTACCGGCGGGCGAAGGAAA 2500
 TTTACGGCGACCCGTTGCCGAACTTGTTGAAGAGCGGCTTGAGAAGGAG
 CTA AAAAGCATCATCGGCCATGGCTTTGCCGTCATTTATTTGATCTCGCA 2600
 CAAGCTTGTGAAAAATCGCTCGATGACGGCTACCTTGTCGGGTCGCGCG
 GATCGGTCGGCTCGTCGTTTGTGCGGACGATGACGGAAATCACCGAGGTC 2700
 AATCCGCTGCCGCCGATTACGTTTGCCCGAACTGCAAGCATTCCGGAGTT
 CTTTAACGACGGTTCAGTCGGCTCAGGGTTTGATTGCCGGATAAAAACT 2800
 GCGGCGGATGTGGGACGAAATACAAGAAAGACGGGCACGACATCCCGTTT
 GAGACGTTTCTCGGCTTTAAAGGCGACAAAGTGCCGGATATCGACTTGAA 2900
 CTTTTCCGGCGAATACCAGCCGCGCGCCCACTATACGAAAGTGCTGT
 TTGGCGAAGACAACGTCTACCGCGCCGGGACGATTGGCACGGTCGCTGAC 3000
 AAAACGGCGTACGGATTTGTCAAAGCGTATGCGAGCGACCATAACTTAGA
 GCTGCGCGGGCGCGGAAATCGACGGCTCGCGGCTGGCTGCACCGGGGTGAA 3100
 GCGGACGACCGGGCAGCATCCGGGCGGCATCATCGTCGTCCCGGATTATA
 TGGAAATTTACGATTTTACGCCGATTCAATATCCGGCCGATGACACGTCC 3200
 TCTGAATGGCGGACGACCCATTTGACTTCCATTTCGATCCACGACAATTT
 GTTGAAGCTCGATATTCTCGGGCACGACGATCCGACGGTCATTTCGCATGC 3300
 TGCAAGATTTAAGCGGCATCGATCCGAAAACGATCCCGACCGACGACCCG
 GATGTGATGGGCATTTTCAGCAGCACCGAGCCGCTTGGCGTTACGCCGGA 3400
 GCAAATCATGTGCAATGTCGGCACGATCGGCATTCCGGAGTTTGGCACGC
 GCTTCGTTCCGCAAATGTTGGAAGAGACAAGGCCAAAACGTTTTCCGAA 3500
 CTCGTGCAAATTTCCGGCTTGTCGCACGGCACCGATGTGTGGCTCGGCAA
 CGCGCAAGAGCTCATTCAAACGGCACGTGTACGTTATCGGAAGTCATCG 3600
 GCTGCCGCGACGACATTATGGTCTATTTGATTTACCGCGGGGCTCGAGCCG
 TCGCTCGCTTTTAAATCATGGAATCCGTGCGCAAAGGAAAAGGCTTAAC 3700
 GCCGGAGTTTGAAGCAGAAATGCGCAAACATGACGTGCCGGAGTGGTACA
 TCGATTTCATGCAAAAAATCAAGTACATGTTCCCGAAAGCGCACGCCGCC 3800
 GCCTACGTGTTAATGGCGGTGCGCATCGCCTACTTTAAGGTGCACCATCC
 GCTTTTGTATTACGCGTCGTACTTTACGGTGCGGGCGGAGGACTTTGACC 3900
 TTGACGCCATGATCAAAGGATCACCCGCCATTTCGCAAGCGGATTGAGGAA
 ATCAACGCCAAAGGCATTCAAGGCGACGGCGAAAGAAAAAGCTTGCTCAC 4000
 GGTTCTTGAGGTGGCCTTAGAGATGTGCGAGCGCGGCTTTTCCTTTAAAA
 ATATCGATTTGTACCGCTCGCAGGCGACGGAATTCGTCAATTGACGGCAAT 4100
 TCTCTCATTCCGCCGTTCAACGCCATTCCGGGGCTTGGGACGAACGTGGC
 GCAGGCGATCGTGCGCGCCCGCGAGGAAGGCGAGTTTTTGTGCAAGGAGG 4200
 ATTTGCAACAGCGCGGCAAATTGTGCAAAACGCTGCTCGAGTATCTAGAA
 AGCCGCGGCTGCCTTGACTCGCTTCCAGACCATAACCAGCTGTCGCTGTT 4300

T

FIG. 88B

MVTKEQKERFLILLEQLKMTSDEWMPHFREAAIRKVVIDKEEKSWHFFYFQ
FDNVLPVHVYKTFADRLQTAFRHIAAVRHTMEVEAPRVTEADVQAYWPLC 100
LAELQEGMSPLVDWLSRQTPELKGNKLLVVARHEAEALAIKRRFAKKIAD
VYASFGFPPLQLDVSVEPSKQEMEQFLAQKQOEDEERALAVLTDLAREEE 200
KAASAPPSGPLVIGYPIRDEEPVRRLETIVEEERRVVVQGYVFD AEVSEL
KSGRTLLTMKITDYTN SILVKMF SRDKEDAE LMSGVKKGMWVKVRG SVQN 300
DTFVRDLVIIANDLNEIAANERQDTAPEGEKRVELHLHTPMSQMDAVTSV
TKLIEQAKKWGHPAIAVTDHAVVQSFPEAYSAAKKHGMKVIYGLEANIVD 400
DGVPIAYNETHRRLSEETYVVF DVETTGLSAVYNTIIELAAVKVKDGEII
DRFMSFANPGHPLSVTTMELTGITDEMVKDAPKPDEV LARFVDWAGDATL 500
VAHNASFDIGFLNAGLARMGRGKIANPVIDTLELARFLYPDLKNHRLNTL
CKKFDIELTQHHRAIYDAEATGHLLMRL LKEAEERGILFHDELNSRTHSE 600
ASYRLARPFHVTL LAQNETGLKNLFKLVSLSHIQYFHRVPRI PRSVLVKH
RDGLLVGSGCDKGELFDNLIQKAPEEVEDIARFYDFLEVHPPDVYKPLIE 700
MDYVKDEEMIKNIIRSIVALGEKLDIPV VATGNVHYLNPEDKIYRKILIH
SQGGANPLNRHEL PDVYFRTTNEMLD CFSFLGPEKAKEIVDNTQKIASL 800
IGDVKPIKDELYTPRIEGADEEIREMSYRRAKEIYGDPLPKLVEERLEKE
LKSIIGHGFAVIYLI SHKLVKKS LDDGYLVGSRG SVGSSFVATMTEITEV 900
NPLPPHYVCPNCKHSEFFNDG SVGSGFDLPDKNCPRCGTKYKKGHDIPF
ETFLGFKGDKVPDI DLNFSGEYQ PRAHNYTKVLFGE DNVYRAGTIGTVAD 1000
KTAYGEVFKAYASDHNLELRGA EIDLAAGCTGVKRTTGQHPGGIIVVPDYM
EIYDFTPIQYPADDT SSEWRTHFD FHSIHDNLLKLDILGHDDPTVIRML 1100
QDLSGIDPKTIPTDDPDVMGIFS STEPLGVTPEQIMCNVGTIGIPEFGTR
FVRQMLEETRPKTFSELVQISGLSHGTDVWLGN AQELIQNGTCTLSEVIG 1200
CRDDIMVYLIYRGLEPSLAFKIMESVRKKGGLTPEFEAEMRKHDVPEWYI
DSCKKIKYMFPKAHAAAYVLM AVRIAYFKVHHPLLYYASYFTVRAEDFDL 1300
DAMIKGSPAIRKRIEEINAKGIQATAKEKSLLT VLEVALEM CERGFSEFKN
IDLRSQATEFVIDGNSLIPPFNAIPGLGTNVAQAIVRAREEGEFLSKED 1400
LQQRGKLSKTLLEYLESRGCLDSLPHDNQLSLF

FIG. 89